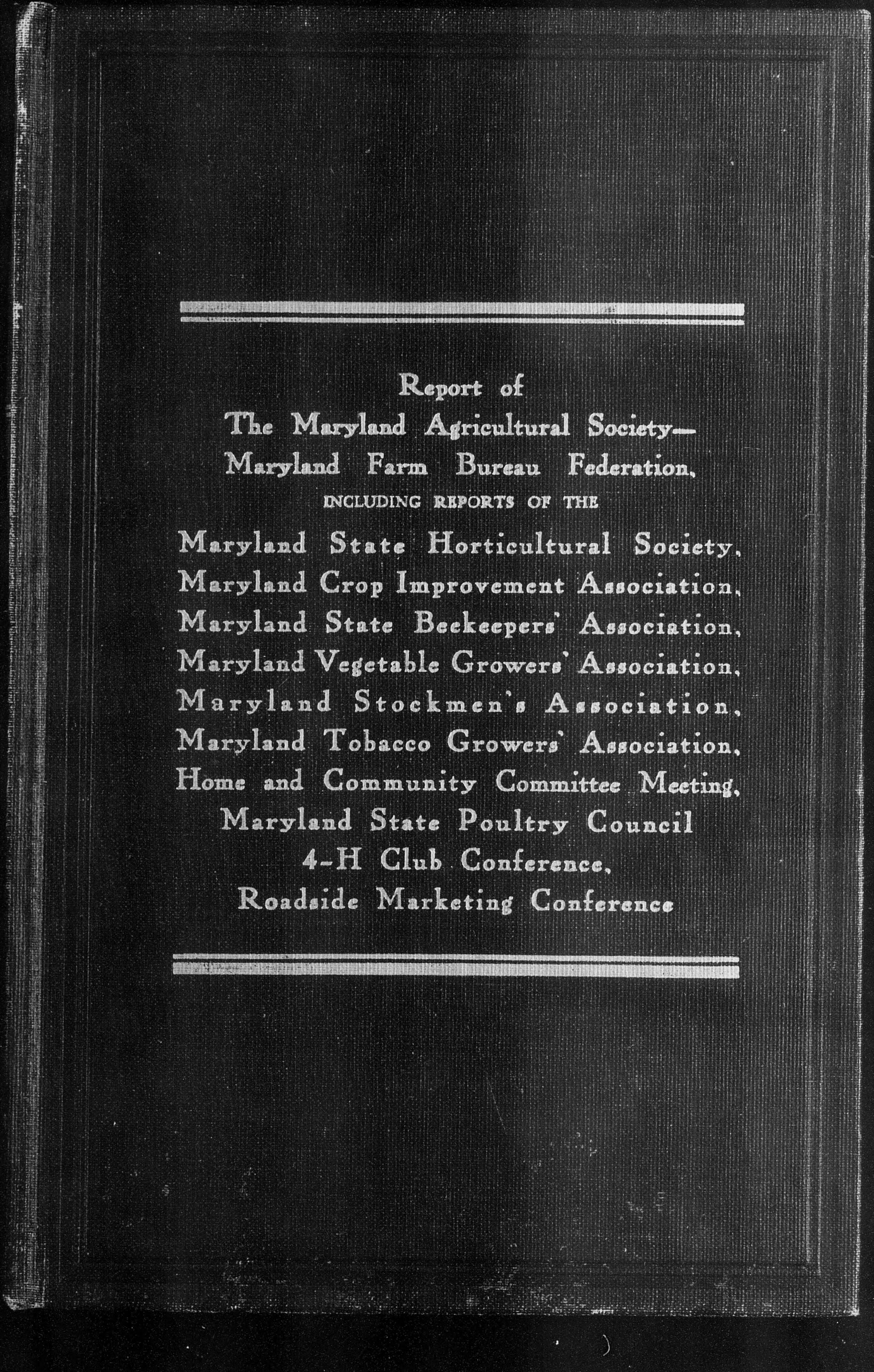

Report of
The Maryland Agricultural Society—
Maryland Farm Bureau Federation,

INCLUDING REPORTS OF THE

Maryland State Horticultural Society,
Maryland Crop Improvement Association,
Maryland State Beekeepers' Association,
Maryland Vegetable Growers' Association,
Maryland Stockmen's Association,
Maryland Tobacco Growers' Association,
Home and Community Committee Meeting,
Maryland State Poultry Council
4-H Club Conference,
Roadside Marketing Conference

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REPORT OF THE

MARYLAND AGRICULTURAL SOCIETY

THE

MARYLAND FARM BUREAU FEDERATION

INCLUDING REPORTS OF

The Maryland State Horticultural Society
The Maryland Crop Improvement Association
The Maryland State Beekeepers' Association
The Maryland Vegetable Growers' Association
The Maryland Stockmen's Association
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LETTER OF TRANSMITTAL

To His Excellency, Harry W. Nice,
Governor of Maryland.

Sir:

I herewith submit to you as directed by the Act incorporating the Maryland Agricultural Society, and also the Horticultural Society, this report for the year 1934, which contains a detailed statement of the receipts and expenditures of the Society as approved by the Executive Committee and Advisory Council. It contains the proceedings of the Nineteenth Annual Meeting of the Maryland Agricultural Society, Maryland Farm Bureau Federation, and annual meetings of the Affiliated Associations.

I trust that an inspection of its contents will convince you that the funds appropriated for this purpose have been wisely and judiciously expended.

Respectfully submitted,

Charles E. Wise,
Secretary.

March, 1935,
Baltimore, Md.

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CONTENTS

The Maryland Agricultural Society—The Maryland Farm Bureau Federation

Page
Letter of Transmittal 3
Board of Directors, Maryland Farm Bureau Federation, 1935 4
Officers of County Farm Bureaus, 1935 5
Officers of Affiliated Associations, 1935 7
Remarks—Harry Nuttle 11
Address by Walter R. Hough, Executive Secretary to Mayor Howard W. Jackson 12
Address by G. H. Pouder, Executive Vice-President of the Baltimore Association of Commerce 14
Address by Wilbert Smith, Frederick County 15
President's Annual Address—Charles T. Cockey, Jr 16
Report of Secretary-Treasurer, Charles E. Wise, Jr 18
Report of the Auditing Committee 23
Address—The New Deal and the Farm Woman—Mrs. Harry L. Davis.. 30
Address—Agricultural Legislation in 1935—Chester H. Gray 33
Presentation of Medals to Vocational Agriculture Boys — J. D. Blackwell 41
Meeting of Farm Debt Conciliation Committee 44
  Address—Mr. Evans 48
  Address—Mr. Bready 51
Report of Credentials Committee—Wilbert L. Smith 67
Address—The Fundamentals of Community Building—Miss Mary Mims 69
Address—Programs Our Farmers Want—Miss Grace Frysinger 75
Address—Some Agricultural Problems Ahead—M. L. Wilson 78
Address—A Look Around the Corner—Dr. T. B. Symons 89
Roll Call for Voting Delegates 99
Report of Resolutions Committee 106
Report of Joint Tax Committee 111
Nomination of Officers 129
Remarks—Charles T. Cockey, Jr 130

Maryland State Horticultural Society

Report of the Secretary-Treasurer—A. F. Vierheller 132
Address—Fulton W. Allen 133
Address—Fruit Russeting and Foliage Injury—Dr. J. H. Gourley 134
Address—Our Experience in Orchard Fertilization and Prevention of Russeting and Cracking of Apples—H. W. Miller 139
Address—Possibilities of Orchard Irrigation in Eastern Apple Culture—Dr. J. R. Magness 143
Address—Cork Injuries and Internal Breakdown of Apples—Dr. D. F. Fisher 149
Address—Organic Matter in Bearing Orchard—Dr. J. H. Gourley 154
Address—Important Practices in Producing a Good Crop of Peaches—Dr. F. P. Cullinan 157
Address—Our Experiences in Building Soil Organic Matter and Producing Good Crops of Peaches—Byron T. Roberts 162
Address—Spray Calendar for 1935—Dr. E. N. Cory 164
Address—Care in Harvesting and Packing Fruit—C. E. Bryan 169
Address—Newer Methods and Materials for Controlling Codling Moth —Edwin Gould 172
Address—Our Experience in Control of Codling Moth and Our Methods in Harvesting and Packing Fruit—Byron T. Roberts 176

LIBRARY UNIVERSITY OF MARYLAND

CONTENTS — (Continued)

Page

Address—How to Avoid Damage to Apples in the Washing Process—Dr. D. F. Fisher 178
Address—Satisfactory Washing Methods for Spray Residue Removal in the East—Dr. J. H. Beaumont 180
Address—Comparisons of Fall, Spring and Fall Plus Spring Applications of Various Nitrogen Fertilizers to Fruit Trees—Dr. A. Lee Schrader 187
Address—The Safe Use of Sulphur as a Fungicide—Dr. P. D. Peterson 191
Report of Auditing Committee 198
Report of Nominating Committee 198
Report of Resolutions Committee 199

Maryland Crop Improvement Association

Program 201
Address—Maryland Soils, Their Location and Productiveness—O. C. Bruce 202
Address—Testing of Soils for Lime and Fertilizer Needs—R. P. Thomas 208
Address—Discussions of Practical Applications of Soil Tests in Agricultural Service—S. D. Gray 211
Address—The Economic Use of the Present Seed Supply — F. S. Holmes 212
Address—Seed Certification in Maryland—F. W. Oldenburg 214
Discussion—Geary Eppley 219
Address—Maryland Permanent Pastures: Their Management, Botanical Composition and Soil Fertility—F. V. Grau 220
Report of Secretary-Treasurer 226
Election of Officers 227

Maryland State Beekeepers' Association

Address—Report of Extension Activities in Apiculture for 1934—G. J. Abrams 230
Address—Plant Poisoning of Bees and Brood—C. E. Burnside 235
Address—Professor Karl V. Frisch and His Work With Bees—Lloyd M. Bertholf 240
Address—Comb Honey Production—N. W. James 245

Maryland Vegetable Growers' Association

Address—Best Varieties of Vegetables for Maryland Conditions—W. A. Frazier 247
Address—Some Recent Developments in Truck Crops Research—Victor R. Boswell 254
Address—Growing and Handling of Sweet Potatoes—W. P. Hotton 265
Address—Color and Other Factors Affecting Quality in Tomatoes—H. B. Cordner 267
Address—Methods of Controlling Truck-Crop Insects and Avoiding Harmful Residues—D. J. Caffrey 272
Address—Price Trends and Outlook for Market Vegetables—Gustave Burmeister 279
Committee Reports 283
Potato Show 284

LIBRARY, UNIVERSITY OF MARYLAND

CONTENTS—(Continued)

Page

Maryland Stockmen's Association

President's Address—J. W. Jones 285

Address—The 1934 Western Drought and Its Effect Upon Eastern Livestock Production—P. V. Kepner 287

Address—Suggestions Concerning Bang's Disease—W. A. McGregor 292

Report of Secretary-Treasurer—B. E. Carmichael 296

Financial Report 298

Address—Cooperative Marketing of Wool—James M. Coon 299

Address—1934 Hog Health Report—Dr. Mark Welsh 305

Address—How Commission Men Can Serve the Livestock Industry—James E. Silcott 309

Address—Baltimore's Sixth Annual Livestock Show—W. R. Harvey 311

Address—Small and Other Livestock Shows—B. Watkins 317

Address—What Some Foreign Governments Are Doing to Aid Live Stock Improvement—C. D. Lowe 320

Address—A 1934 Importation of Angus Cattle to Maryland From Scotland—George Bailey 325

Address—The Public Stockyards and the Livestock Producer—J. C. Cash 327

Address—Horse Disease Experiments in Maryland—Dr. A. L. Brueckner 333

Address—Some Horse Observations in the West—K. A. Clark 336

Address—Maryland Stockmen and 4-H Club Work—E. G. Jenkins 340

Address—Maryland Stockmen and Vocational Agricultural Students—Dr. J. D. Blackwell 342

Address—Our Mutual Interests—W. L. Schluderberg 343

Maryland Tobacco Growers' Association

Annual Report of General Manager—W. B. Posey 349

Boys' and Girls' 4-H Club Conference

Topic Discussions 351

Home and Community Committee Meeting

Minutes of 1934 Annual Meeting—Mrs. R. C. F. Weagly 353

Address—The Farm Woman and the New Deal—Mrs. W. W. Rambo 354

Maryland Farm Roadside Marketing Association

Minutes of Meeting—E. P. Walls, Secretary-Treasurer 357

Election of Officers 358

Maryland State Poultry Association

Committee Reports 359

Maryland State Poultry Council

Minutes of the 1934 Meeting 360

Address—The Effect of Nutrition On the Hatchability of the Eggs of the Domestic Fowl—Dr. H. W. Titus 364

Address—Fresh Egg Legislation in Northern States—Alben E. Jones 369

Report of Executive and Resolutions Committee 371

REPORT

OF THE

NINETEENTH ANNUAL MEETING

OF THE

Maryland Agricultural Society
Maryland Farm Bureau Federation

January 8, 9, 10 and 11, 1935
Lord Baltimore Hotel
Baltimore, Maryland

WEDNESDAY AFTERNOON, JANUARY 9

Invocation by Rev. W. C. Roberts, Rector St. James Episcopal Church.

MR. COCKEY, President: As your presiding officer this afternoon, I present our good friend, Mr. Harry Nuttle, from Caroline County.

MR. NUTTLE: This is not a speech I have in my hand, it is just a program that our Secretary handed me. I haven't any speech; I wish I did have something on my mind that would help, but I am just the engineer this afternoon; I am only supposed to give the signals when some one is to work this red light thing here—there they are working it on me already, I thought I was supposed to do that. I am hardly the engineer, I am more the watchman along the track, the brakeman to tell them what to do.

However, it is a pleasure to be here in our annual meeting, and a pleasure to preside. I hope we will have one of the best conventions we have ever had. We are a little ahead of time—we were supposed to have some songs to fill in, but it seems the Stockmen's Association is still busy in the next room and they do not want us to sing; so, as our singing will bother them we will have to put that off.

First on the program is an "Address of Welcome" from the Mayor. He is not able to be here and his secretary, Mr. Hough, will give the welcome in his absence. The Mayor was here last year and gave us a fine speech. I am sure his secretary will do the same. We are very glad to see him. Mr. Hough.

ADDRESS OF WELCOME

By WALTER R. HOUGH

Executive Secretary to Mayor Howard W. Jackson

Mr. Chairman, Mr. President and Ladies and Gentlemen: I am here today to represent very briefly, His Honor, Mayor Jackson. The Mayor had hoped to be here, but owing to circumstances over which he had no control he is at this time in Annapolis assisting in the inauguration of a certain gentleman who is taking over the command of the destinies of the State of Maryland. Therefore, he sent me here to say a few words for him.

Representing the Mayor or any other public official is a rather difficult situation. The representative is usually not known to anybody and they care less about him. The best he can do is to say it briefly. Now, that reminds me—my position of being led up to the slaughter of one convention—of a little story of the two bulls, one the good one and one the bad one, and the bad bull said to the good bull, "Have you heard the master saying anything about me recently?" The good one says, "No, but I saw him talking to the butcher today." I am sort of in this position, and the best I can hope is to say a few words and to get away without too much contention.

I have been reading in the papers all the things the farmers want—they are using a lot of letters in Washington—I hope your alphabet will spell J O Y and not R I P.

Now I know you are thinking that I have already used up half of my fifteen minutes and you want something serious to hand out, and so I am going to read the serious paper which I brought.

In the absence of Mayor Howard W. Jackson, who is attending officially the inauguration of Governor Harry W. Nice, at Annapolis, it is my pleasure to extend to you his most cordial greetings and best wishes. The annual convention of your organizations in Baltimore is an occasion of great importance to the agricultural and dairy interests of Maryland, and also to the people of this city who are largely dependent upon your production efforts for the food products they purchase in this market. Any program which has to do with efficiency in farm production is of vital interest to all the people of this State, as efficiency after all spells economy in the matter of production, and this is reflected not only in the increased return to the producer in the net from the farm above gross operating costs, but in the matter of maintaining price levels in the consumer markets that are reasonable for the purchasing public.

The city dweller is as much dependent upon the true effectiveness of farm operation as is the farmer upon the ultimate purchaser of his products. The two things are so inter-related that what is good for one is good for the other, and lack of prosperity in either case brings its unfavorable reaction upon the other.

The prosperous farmer is a consistent purchaser of manufactured articles created or sold in more concentrated centers of population. The farmer is naturally a spender, when he has money to spend, and thus when he receives a just return for his products his purchasing power immediately stimulates not only the manufacturing of the city, but its retail trade. This mass purchasing returned from the farms is reflected almost immediately in increased employment in this city and other cities and towns of the State, and a consequent increase of returns to wage earners. On the other hand the wage earner who receives a just compensation is in a better position to purchase farm products at a price level which will insure the continuance of the purchasing power of the farmer.

Your organization has done much to foster understanding along these lines. I remember at one of your gatherings that you invited a number of Baltimore business men and other interested persons to listen to your discussions, so that they might have a better understanding of the aims and ambitions of the farmers and dairymen of Maryland. This move undoubtedly created a much better understanding as between the purchasers of the agricultural areas and the consumers in population centers. I believe today that the bond of sympathy and understanding as between these two groups is stronger than ever before in the history of our State. The fact that you are holding this convention in Baltimore is one of the happy auguries of the times. In these days of the Washington alphabet many city dwellers are a bit confused as to what the various farm relief movements really mean. As a matter of fact, I gather from some of your members that they are not quite sure themselves as to the exact results to be expected. Nevertheless, out of all of this is coming a better spirit, a feeling that true prosperity will come to the farmers of Maryland. Nature has endowed our State with some of the most fertile lands of America, here people are industrious and progressive and I feel that out of the present situation, which is being guided largely by such organizations as your own, that truly better times will be the result.

On behalf of Mayor Jackson I wish for your organizations continuance of the splendid upbuilding policy which has brought many beneficial results to the farmers of Maryland, and which in the years to come should assure even better conditions.

Now, I am not going to take up any more of your time. The Mayor had hoped to be with you and he wants you to know his heart is with you. He wishes for me to say, "God bless you and may your new year see the fulfillment of your fondest hopes and ambitions."

MR. NUTTLE: Thank you, Mr. Hough. I am sorry you did not get to hear us sing together. We want to assure you that we can not only sing together but we can also work together. We wish you would say to the Mayor we know he is in sympathy with the farmer, and we have always felt he would cooperate with us in our work.

We are also glad to have with us Mr. G. H. Pouder, executive vice-president of the Baltimore Association of Commerce.

MR. POUDER: My trouble is that I always have to follow Mr. Hough, and it is a little hard on me. Walter makes such a good talk he steals my thunder. He always comes here in an automobile, and I have to walk, he has other advantages such as red-haired girls in his office which he told you of, and I cannot afford that. Generally, he is sitting on top of the world over there in the City Hall, but he is doing a whale of a job for the City of Baltimore.

The Baltimore Association of Commerce has for many years maintained an active interest in the further expansion of Maryland's agricultural industry. It has fully realized that the production and sale of farm products operate as a valuable stimulus to the development of forms of economic activity—such as manufacturing, transportation, trade, etc.

Many business executives, however, have failed to appreciate the importance of agriculture as a factor in the State's economic structure. According to the most recent figures available, the value of Maryland's agricultural production ranks second in comparison with that for other basic industries, being exceeded only by the value added by manufacture in the State's industrial establishments. With the exception of Allegany, Baltimore and Washington counties, the value of the agricultural production exceeded the value for other basic industries in every county of Maryland. In some of the counties its value even exceeded the aggregate value for all other basic industries.

It is apparent from these statements that in many sections of Maryland agriculture is the dominant activity of the population, and that in such areas the returns from farming activities constitute practically the only source of spendable income.

Recognizing the fundamental effect which the developments and trends in agriculture have upon general business conditions, the Association of Commerce, in cooperation with the State government, recently compiled and published a detailed economic survey of Maryland's agricultural industry. This study was intended to serve as a factual basis for an effort to more intensively develop the State's agricultural resources, and to aid the business men of the State who desired something definite to guide them in their plans for the future. Even before undertaking this survey, the Association of Commerce had cooperated in various other ways to advance the position of Maryland agriculture.

In conclusion, I wish to congratulate the farm leaders of Maryland on their splendid work and achievements, and to extend to them the cooperation of the Association of Commerce in their effort to further develop one of the State's largest and most important industries.

MR. NUTTLE: We will now have the response in behalf of the Maryland Farm Bureau by Mr. Wilbert Smith of Frederick County.

MR. SMITH: Mr. Chairman, Mr. Cockey, Mr. Secretary, Members of the Maryland Farm Bureau, Ladies and Gentlemen: I believe we are a little behind in our program and here is one place where we are going to catch up. I am not going to speak long. I appreciate the kind words that have been said by the two representatives who have preceded me. They are words of cheer and hope, but certainly one of the things that we have accomplished since the Farm Bureau has been organized in the State of Maryland was brought out by these two men, and that is that the leaders in the cities realize that there is an inter-dependence between agriculture and industry. That is one of the things that we have been trying to inculcate into the minds and hearts of men who have guided the destinies of this nation through the past years in so far as commerce, industry and business is concerned. We believe that we have arrived at a point where that is given due consideration. We farmers of the State of Maryland are just as anxious that the banks, the factories of the City of Baltimore shall be lined with money as you are. We have no desire to see them idle. We want to see them run on full time, that your merchants shall conduct a business which shall employ many people. Aside from that fact, we enjoy the hospitality of this city. Your parks and institutions that you have are a source of education and joy to us, just the same as when you men and women from the city come out into our country and enjoy the scenery, the landscapes, the roads over which you pass, our fertile fields and farms, our valleys, our mountains and our hills are yours to enjoy, and we like for you to enjoy them. Certainly, the men and women who live on the farms in the State of Maryland are glad to come to Baltimore once a year in this convention, and I would like for the Secretary to the Mayor to convey to him this message from the Maryland Farm Bureau Federation—that we want to assure him that as long as a man shall be selected to the high office which he holds who can and will express the sympathy and understanding that has been expressed here this afternoon, we will be glad to help and assist the City of Baltimore to attain that place which she ought to enjoy, the most important convention city of the East.

MR. NUTTLE: That fellow Smith sure can say it when he gets started, can't he? We will now have the President's address. President Cockey.

ADDRESS OF THE PRESIDENT

ANNUAL MEETING, 1935

By CHARLES T. COCKEY, JR.
Pikesville, Md.

Mr. Chairman, Ladies and Gentlemen: It is my privilege and a pleasure on this occasion, on behalf of the Maryland Farm Bureau Federation, that I welcome you to this, our nineteenth annual convention. We hope our report for 1934 activities will be satisfactory and encouraging, and that at this convention the program of work for the coming year will be mapped out to the satisfaction of our members, and that it will be beneficial to all the farmers of this great agricultural State.

Also, on behalf of our Board, I wish to express its appreciation of the splendid cooperation and loyalty shown by our Farm Bureau members in the past, and to say to each one of you that you have played a large part in the up-building of this organization and its wonderful success. Without you, this Farm Bureau could not have been developed, and let me add that the whole purpose of your organization is to serve its members.

I also wish to express our appreciation for the help given this organization by our State Agricultural College and our Extension Department. We are, indeed, fortunate in having such able men and women connected with these institutions, always ready and always willing to counsel with us and help solve our problems.

Also, I wish on this occasion to express our appreciation of the splendid cooperation given us by the Maryland State Grange. They have always willingly joined with us in the attempt to solve our mutual problems. May our pleasant relations continue in the future as they have in the past.

During the past year we have had a wonderful membership increase in our State organization, due to the splendid co-operation of our County Farm Bureaus and the untiring efforts and wonderful ability of our good secretary, Mr. C. E. Wise, Jr. Our paid-up membership for this year shows an average increase over the entire State of 47 per cent. over last year. This demonstrates the willingness of the farmers to join with us when they are properly approached. It also indicates they are fast giving up the idea of "individualism" and that they are becoming more and more "organization-minded" and want to cooperate with their fellow farmers in the solving of their problems.

Maryland is not the only State in the Union whose membership has grown. The past year has been one of wonderful progress for the National Farm Bureau. Its paid-up membership has made an average increase of more than 36 per cent. over last year. This is one of the most spectacular growths in membership for the National organization since the early days of its organization.

I am not going to make a long address. Our secretary, in his report, no doubt, will go fully into our activities for the past year.

Our resolutions to be adopted at this convention will indicate our program for the next.

There is one matter, however, and one matter only I wish to stress at this time and that is:

Production Control

A successful farmer is one who produces well, works well, lives well, pays well, and I might add, lays up the proverbial nest egg for the rainy day. How many successful farmers are there in the nation today?

There was a time in our forefather's day when "individual" farming paid. He produced all he could and found a ready market at good prices, thereby enjoyed a good mode of living. Times have changed. Have we changed with them? Should we not use more business-like methods in conducting our business as industry does? Should we not study demand like industry does and see to it that it is not over-supplied? I hope you agree with me that we should.

Then let me urge that this Farm Bureau, and all other farm organizations, and every farmer in the State cooperate in *production control.* Production control holds out, in my judgment, one of our greatest hopes for successful agriculture.

Farmers are more organization-minded today than ever before. They realize the need of cooperation as never before. Industry, finance and labor are raising their voices in their own behalf, and are being heard. This is, indeed, a challenge to the farmer to strengthen the voice of agriculture in this State and in this nation by strengthening his organization.

MR. NUTTLE: Mr. Cockey can point with pride to the past year as president of the Farm Bureau—I think we owe him a big hand.

We will now be glad to listen to the secretary-treasurer's report Mr. Wise.

REPORT OF SECRETARY-TREASURER

By CHARLES E. WISE, JR.

Mr. Chairman, Ladies and Gentlemen of the Farm Bureau: Today marks the close of one Farm Bureau year and the advent of another. Ten months ago you honored me by entrusting many of the responsibilities of your great organization in my hands and I welcome the opportunity to make my first report to you. I am fortunate in succeeding Melvin Stewart, Frank Payne and Miles Fairbank who have written such splendid records in Maryland Farm Bureau history. The counsel and cooperation of our leaders has given me confidence that the future of our organization will be in keeping with the traditions of the past fifteen years.

The record of 1934 is in harmony with this past as it has been a year of substantial progress for agriculture and for the Farm Bureau. Last year the new deal programs were in the formulative stage, a stage where action was essential. The wheat surplus was three times the average, while today we have a normal carry-over, the cattle situation has been greatly improved by a six-year adjustment made in one year and other farm products offer a similar picture, one of substantial improvement. Drought plus our reduction programs has accomplished these adjustments and it is gratifying to see that the policy sponsored by the American Farm Bureau has not only proven a help in crop adjustment but a savior in time of drought and national emergency. Although prices have improved we have yet to feel the full benefit of these drastic adjustments. It is our duty to continue to assist in this national program and support the Agricultural Adjustment Act as the opposition to it develops. Agriculture must have the opportunity to further balance production and to prevent the accumulation of future excessive surpluses as the long-time agricultural program is being evolved.

Your national organization faced the new problems and met them with a sound program that has helped and we are proud of it. We claim nothing in its application but that our leaders have cooperated in the many programs offered to our farmers. Individually our members have rendered yoeman service in the application of the crop reduction programs, the production credit program and the handling of the drought cattle. In fact, many have devoted so much of their time and effort to these activities that our own organization has suffered. The county agents have worked hard and have put over the program our organization sponsored, thereby bettering farm prices and the outlook for agriculture. We thank them for their efforts and assure them of our hearty support.

This definite improvement in agriculture has been reflected in the many enterprises sponsored or operated by your Farm Bureau. The Wool Pool shows a gain of 16,600 pounds of wool pooled over 1933, or an increase of 33⅓ per cent. The 1934 wool has not been sold as a very dull market developed early in the summer due to excessive supplies of retail woolen goods, the threat of tariff reductions and the textile workers' strike. A better market is now in sight but the return to our growers will not equal that of last year's pool. It is an admitted fact that the National Wool Pool has steadied the market, thereby maintaining the price which will prove beneficial to all wool growers during the coming year.

The Agricultural Corporation of Maryland enters this year in a greatly improved financial position. It is the regional agent for the Farmers' National Grain Corporation which has enjoyed an increase of 125 per cent. in the amount of wheat and 350 per cent. in the amount of corn sold for our farmers. Through the National Grain Corporation the producers are gradually gaining market control and we may well spend time and effort to inform our members of the grain marketing opportunities offered by this great cooperative.

In July the Eastern Livestock Cooperative Marketing Association began operations on the Lancaster, Pennsylvania, market, thereby improving its facilities for service to Maryland stockmen. Our farmers have not used the livestock cooperative as much as they should for their own good and we must inform them of the benefits this association provides.

The Ohio Farm Bureau Mutual Automobile Insurance Company, cooperating with the Maryland Farm Bureau, has experienced the best sales year in its history. On January 1, 1933, there were 10,948 policies in force, while today there are 13,220 policies in force. Since entering the State they have paid over $450,000 in claims to our people to say nothing of the protection given property holders and the financial support rendered our organization. It is this assistance that enables the State organization to operate on its share of the $5.00 membership fee without curtailing the service rendered our members. In June your secretary was elected to the Board of Directors of the Ohio Farm Bureau Insurance Company for a three-year period. One cannot associate with the group of Farm Bureau leaders on this board without sharing their spirit of service. The cooperation given us by this company has been excellent and our members realize more and more the many benefits it has brought us.

A State committee appointed to investigate the possibilities offered in the cooperative sale of gas and oil is making a very through study of the proposition and will be in position to make a definite report at an early date.

Better seed has long been an objective of the Farm Bureau, so we were pleased when F. S. Holmes of the Maryland Seed Laboratory was appointed chairman of the International Committee on Seed Standards for the meeting in Stockholm last July. As no funds were available for the trip, we advised the various seed interests of the situation and contributions totaling $450.00 were secured enabling Mr. Holmes to attend this important conference.

Notable among the many Farm Bureau meetings held during 1934 was a series of twelve picnics in July and August at which time we were fortunate in having M. D. Lincoln and Chester Gray for speakers. Later in the summer two tours to the Chicago World's Fair were arranged and some two hundred Maryland people had an opportunity to see this wonderful exhibition at a bargain price. In September an increased number of members attended Farm Bureau Day at Timonium Fair and expressed their appreciation of the change from Tuesday to Wednesday, a race day.

In November a women's speaking contest was arranged by the Home and Community Chairman in cooperation with the Extension Service. Each of the eleven entrants made a splendid Farm Bureau talk with the first prize going to Mrs. Harry L. Davis of Frederick County. This contest demonstrated that Maryland women can and will help the Farm Bureau. The Board of Directors recognizing this fact has already authorized another contest.

In December, forty-three of our members attended the National Convention in Nashville—a convention that proved to be the best ever held, and we returned home with a clearer idea of the vast and powerful organization of which we are a part. In Nashville, Mrs. Harry T. Williams was elected as one of the four voting delegates to represent the newly formed women's organization and was also on the general program for a discussion of farm credits. Your president, Charles T. Cockey, Jr., served on the national tax committee and Mrs. Davis represented us in the national speaking contest.

During the year the Maryland Farm Bureau was represented at several important out-of-State meetings. In June, Mr. Cockey attended a conference of Farm Bureau presidents in Chicago called to further the cooperative movement, and in November your president, secretary and Morris Todd attended the Northeastern Agricultural Conference in New York. Mrs. Harry T. Williams attended the Rural Life Conference in Washington, November 17th to 19th, and P. C. Turner represented us at the Northeastern States Dairy Conference in New York, December 4th and 5th.

The Legislature did not meet in 1934, consequently our efforts have been confined to national legislation and to the preparation of the 1935 State program.

Last spring we assisted materially by supporting several important bills sponsored by the American Farm Bureau Federation as practically every county joined in the fight for an excise tax on imported fats and oils. Farm organizations' efforts were rewarded, the bill passed and our dairy products are now protected by a tax of 3 cents per pound on the billion pounds of fats and oils annually imported. We were not so fortunate in our fight for the amendments to the Agricultural Adjustment Act or the activities to secure a further devaluation of the dollar, but will continue our efforts in 1935.

During the year unsatisfactory conditions have developed on our State dairy markets and we have used our influence to secure a satisfactory solution of this problem. Several of our members are now serving on a State committee, appointed by the Governor-elect, to study the milk marketing situation and draft the legislation needed.

NRA codes have worked unnecessary hardship on nearly all groups of our farmers as prices on fertilizer, vegetable containers and other necessary equipment have increased faster than the prices of the farm products directly affected. A recommendation for relief on this score was submitted to the national convention and acted on favorably. The minimum wage requirements in the canners' code as applied to the first preparation of vegetables for canning have increased costs and threatened the curtailment of our farmers' market for these crops. Your secretary has cooperated with a group of canners, growers and the Extension Service in submitting to the canning code authorities a brief that requested an exemption from the minimum wage on spinach trimming but only temporary relief was secured. A similar exemption now in effect on the preparation of tomatoes for canning will need our support to insure its continuance.

Your State Tax Committee has held four meetings and has prepared a tweny-page report that will be submitted at the meeting Friday morning. This same committee prepared and forwarded a resolution requesting a study of road costs to secure accurate data and to provide information that will lead to a more efficient use of funds in farm road construction. About 60 per cent. of Maryland farms are still served by dirt roads and it is believed a better use of funds will materially reduce this percentage.

The emergency relief problem is closely related to the tax question and will become more so when the Federal Government returns this function to State and local authorities. Last spring your board recommended to the Governor that improvements be made in relief administration and that wages paid for relief work be relatively lower than the local wage scale. While both of these recommendations have been recognized and partially complied with, this proposition will demand our attention during 1935.

We have aimed to tell you through the Bureau Farmer what your organization is doing and in addition to this a news release has been sent to county papers every week. The counties have been encouraged to send a monthly news letter to their members and it is worthy of note that the three counties adopting this suggestion, have increased their membership this year.

Your State membership has increased 47 per cent during 1934; based on cash received from the counties and there are several counties from which the returns are incomplete. This increase is the result of hard work in the membership campaign by county leaders, members and Extension workers who have cooperated with us.

Predicated on the last twelve months experience, 1935 promises an even larger opportunity to increase our membership and thus strengthen our position to help ourselves.

I wish to thank Dr. Symons particularly for the tireless and wholehearted support he has given me; our president, Mr. Cockey, for his cooperation and backing, and Charles I. Boyle and Wilbert Smith for their assistance in soliciting members. It is difficult to stop as there are so many of you whose services, like those of Miss Dressel, are invaluable to the organization.

Today we welcome three organizations who have joined our group during the past year. Prince George's County Farm Bureau as a member of the Farm Bureau Federation; the Maryland Poultry Association as a re-affiliated member; the Hillsboro-Queen Anne Cooperative as a new affiliated member.

While the Auditing Committee will advise you in detail as to the finances, it is gratifying to report an increase in income from both membership and insurance. Aware of this trend your board adopted a program of conservative expansion based on the premises that our income is for building the organization. Chief among these increases are $800.00 for organization activities, $300.00 for encouraging attendance at the National Convention, and $1,100.00 paid back to the counties. Beginning January 1, each county has received 15 per cent. of the insurance renewals originating in the respective counties. This policy was adopted by your board to assist and strengthen the county organizations and will be continued to counties that qualify in 1935. In spite of the increased expenditures a surplus of $2,700 has been added to the assets of the Maryland Farm Bureau for the year 1934.

Our progress is evident and the machinery of our own making is set up to assist in the solution of our major problems which can be worked out, not this year, but eventually. Our organization is progressing—it is vigorous and it is our duty as individuals to inform ourselves and then inform every farmer in Maryland about the Farm Bureau. An informed farmer is a member, so let us resolve now to give all our farmers the opportunity to join us and help themselves. If we will do this, we benefit ourselves and further assure the attainment of that economic position which so long has been our goal.

MR. NUTTLE: We are mighty glad to have Mr. Wise as secretary. We were sorry that Miles Fairbank had to leave us, but we are exceedingly glad to have Mr. Wise. We hope he will do even bigger things in 1935. We will now have the report of the Auditing Committee.

REPORT OF THE AUDITING COMMITTEE

The Auditing Committee appointed by the president to examine the annual audit of the Treasurer, submits the following report:

The books and accounts of the Maryland Farm Bureau Federation have been audited by a certified public accountant, and your committee has examined the audit as prepared. This report will be printed in the annual report, and a copy forwarded to each county and will be open to all members for their information.

Although it has not been the policy of the Farm Bureau to accumulate large surpluses, but rather to spend available funds in giving service to its members, it is gratifying to report that the State organization has accumulated a surplus during the year's operation. The liquid assets of the Maryland Farm Bureau Federation total $14,723.96—reflecting an increase of $2,796.78.

All obligations have been paid up to and including December 31, 1934.

Respectfully submitted,

P. C. TURNER,
A. G. ENSOR,
JOHN W. SMITH,
C. A. DUVALL.

January 7, 1935.

The Maryland Farm Bureau,
Sherwood Building,
North Avenue and Charles Street,
Baltimore, Maryland.

Gentlemen:

I have completed an audit and examination of your books and records for period from January 1, 1934, to December 31, 1934, and submit the following:

Schedule 1—Statement of Receipts and Disbursements for period from January 1, 1934, to December 31, 1934.

Schedule 2—Statement of Receipts and Disbursements for month of December, 1934.

Schedule 3—Statement of Assets as at December 31, 1934, and analysis of Accounts Receivable as to age.

Comments

Schedule 3 reflects an increase of liquid assets for period of	$2,910.47
Reflects a decrease in fixed assets for period of	113.69
Net increase of assets for period	$2,796.78
Total assets December 31, 1934	$15,940.72
Total assets December 31, 1933	13,143.94
Net increase of assets for period	$2,796.78

Respectfully submitted,

W. R. DANCE,
Registered Public Accountant.

Schedule 1

Statement of Receipts and Disbursements for Period From January 1, 1934, to December 31, 1934

RECEIPTS

County Dues Collected	$3,121.00	
A. F. B. F. Dues Collected	1,247.00	
Co-op Subscriptions Collected	624.00	
Associated Membership Dues Collected	220.00	
Publicity Income	370.70	
Bonding Expense Refund	63.44	
Annual Meeting Expense 1934 Income	1,026.80	
Office Expense Refund	24.90	
Rent Telephone and Telegraph	1,281.63	
Traveling Expense President Refund	87.24	
Traveling Expense Secretary Fairbank Refund	102.50	
Traveling Expense Secretary Wise Refund	100.00	
Auto Insurance Commissions Income	3,293.85	
Auto Insurance Renewals Income	10,664.00	
Interest on Liberty Bonds Income	42.50	
Interest on U. S. Treasury Bonds Income	60.00	
Farm Bureau Organization Expense Refund	272.12	
Live Stock Field Service Income	90.90	
T. Fair Expense Refund	45.00	
T. Fair Ticket Sale Income	96.85	
Wool Pool Expense Refund	170.04	
Total Receipts	$23,004.47	
Bank Balance January 1, 1934	2,265.60	
Available Cash		$25,270.07

DISBURSEMENTS

Farm Bureau Organization Expense	$1,345.59	
Board of Directors Expense	633.74	
Publicity	1,206.25	
Salary President	1,200.00	
Salary Secretary-Treasurer Fairbank	575.00	
Salary Secretary-Treasurer Wise	2,700.00	
Salary Clerks	2,659.00	
Salary Accountant	180.00	
A. F. B. F. Dues	1,165.50	
Bonding Expense	86.18	
Annual Meeting Expense 1934	1,441.48	
Office Expense	1,264.08	
Auto Expense	534.70	
Federal Check Tax	11.84	
Rent Telephone and Telegraph	2,395.32	
Traveling Expense President	168.48	
Traveling Expense Secretary Fairbank	29.74	
Traveling Expense Secretary Wise	337.25	
Committee Expense	385.85	
Distribution of Auto Insurance Renewals	1,134.79	
T. Fair Expense	210.45	
Annual Meeting Expense 1935	38.50	
National Convention Expense	304.85	
Furniture and Fixtures (Adding Machine)	93.75	
Total Disbursements		20,102.34
Equitable Trust Company Balance December 31, 1934		$5,167.73

Schedule 2

Statement of Receipts and Disbursements for Month of December, 1934

RECEIPTS

County Dues Collected	$371.25	
A. F. B. F. Dues Collected	148.50	
Co-op Subscriptions Collected	74.25	
Associated Membership Dues Collected	40.00	
Rent Telephone and Telegraph Refund	103.33	
Auto Insurance Commission Income	167.52	
Auto Insurance Renewals Income	1,825.00	
Bonding Expense Refund	7.31	
Publicity Income	11.00	
Farm Bureau Organization Expense Refund	139.04	
Wool Pool Expense Refund	170.04	
Total Receipts	$3,057.24	
Bank Balance December 1, 1934	4,134.48	
Available Cash		$7,191.72

DISBURSEMENTS

Office Salary President	$100.00	
Office Salary Secretary and Treasurer	300.00	
Office Salary Clerks	305.00	
Office Salary Accountant	10.00	
Office Expense	91.97	
Rent Telephone and Telegraph	182.12	
Traveling Expense Secretary	23.75	
Farm Bureau Organization Expense	176.26	
Auto Expense	46.33	
Committee Expense	46.90	
Traveling Expense President	2.10	
Distribution of Auto Insurance Renewals	212.19	
Bonding Expense	10.66	
Furniture and Fixtures (Adding Machine)	93.75	
National Convention Expense	304.85	
Publicity	78.23	
Annual Meeting Expense 1935	38.50	
Federal Check Tax	1.38	
Total Disbursements		2,023.99
Equitable Trust Company Balance December 31, 1934		$5,167.73

Schedule 3

Statement of Assets as at December 31, 1934

LIQUID

Cash in Equitable Trust Co. Active Account		$5,167.73	
Cash in Union Trust Co. New Account		524.66	
Cash in Equitable Trust Co. Saving Account		2,000.00	
Union Trust Co. Certificate of Beneficial Interest (in safe deposit box)		349.24	
U. S. Liberty Bonds 4¼ (in safe deposit box)		2,040.00	
U. S. Treasury Bonds 3 (in safe deposit box)		1,960.00	
Accounts Receivable as per office record		628.33	
Live Stock Association Note (in office safe)		2,054.00	
Total Liquid Assets			$14,723.96

FIXED

Furniture and Fixtures	$3,023.86		
Less Depre. Reserve	2,281.72		
Net Book Value		$742.14	
Automobile....	725.59		
Less Depre. Reserve	250.97		
Net Book Value		474.62	
Total Fixed Assets			1,216.76
Total Assets			$15,940.72

ANALYSIS OF ACCOUNTS RECEIVABLE

Accounts on books longer than six months	$287.25	
Accounts on books less than six months	341.08	
Total Accounts Receivable		$628.33

Mr. Nuttle: You know we can go around Baltimore and throw out our chests with that sort of a report.

Now, how about some songs? Have you all got song sheets?

Mr. Wise suggests that the directors come forward and fill these front seats.

Mrs. Spoerlein of Carroll County will lead the singing.

Mrs. Spoerlein: When Mr. Wise asked me to lead the singing, I told him I would be delighted to do it, but he would have to take me for better or worse. That reminds me of a colored man who was trying to get rid of his wife. The preacher says, "Rastus, I just married you two months ago." "Yes, sah," "What in the world is wrong?" "Well, I just can't get along with that woman any longer." "But you took her for better or for worse." "Yes, sah, but she is a darned sight worser than I took her for."

Mr. Nuttle: Now, I want to get these directors up here. I have a badge to put on you. Come on up.

Mr. Cockey: I do not understand why they did not want to come up. They are a mighty good-looking set of men.

(Singing.)

Mr. Nuttle: We are a little bit ahead of our program, and we have with us this afternoon the manager of the local branch of the National Grain Corporation, Mr. Sam L. Hassell. I would like to have just a few words from Mr. Hassell.

Mr. Hassell: I am glad to be with you this afternoon. My little talk will take but a few minutes.

Cooperative marketing of grain is now more than an ideal. It has now been actually realized and today it is being successfully performed in this country. It was first visualized by farmers who desired to protect and better themselves by establishing their own marketing machinery, and it is true that the effective application of the principles of cooperative marketing have corrected a great many abuses of the grain trade, and did so a long time before codes of fair competition and the NRA were ever thought of. The wide difference between buying and selling prices formerly existing at country stations have been narrowed to the point where it is now almost impossible for the old line and independent grain dealers to get the enormous margins of profits they formerly acquired, because in the mechanics of marketing of grain cooperatively the principle is the reverse of that practice followed by the old line grain trade. In other words, the cooperatives obtain the highest prices possible for their grain and pay a corresponding higher price to their farmer-members, thereby bringing the buying and selling prices closer together.

By the establishment of the cooperatives, the farmers were also assured of honest weights and fair grades.

The cooperative elevators of the United States have steadily increased the percentage of member grain handled during the last decade and the volume handled by the Farmers' National Grain Corporation is significant of the loyalty of farmers to this plan of marketing. For instance, here at Baltimore the Farmers' National has steadily increased the percentage of member grain since the date of beginning our marketing operations in this area and the last fiscal year showed an increase of well over 100 per cent. over the year before, but the amount of grain actually handled is still comparatively very small as compared with the total of all the marketed quantity of grain in the State of Maryland.

Our task is to explain the plan of cooperative marketing to farmers more thoroughly so that they will realize its benefits and so that they will organize themselves properly to insure the continuance of this economic and protective service. We must continue to organize farmers into marketing groups to effectively and economically handle the Maryland crops to the best advantage of the producers. It will be necessary to form local cooperative marketing units at every station where a surplus of grain is produced over local consumptive demand, provided this quantity is sufficient to produce a revenue that will maintain some kind of a grain handling facility. Individuals who have heretofore shipped to us direct have benefited themselves to some extent, and we are appreciative of that business, too, but it is that vast number of farmers who individually do not produce a car-load of grain that must be grouped into units for shipping purposes. At these units the grain is to be bought, assembled, segregated by grade and shipped to us to obtain the maximum protection and benefits of cooperative marketing. No doubt this plan has been previously visualized by many cooperative minded farmers here, and I am sure a lot of thought has been given to it, but the actual practical application of the theory is yet to be made before much headway can be gained in the State. It will require the combined efforts of the Farm Bureau Federation, the Agricultural Corporation of Maryland, and the Farmers' National Grain Corporation to make this plan a success, and I am sure that the farmers of Maryland could not place their interests in more loyal hands. Each of these organizations, of course, is performing its own specific kind of work in the best manner possible, with the one thought uppermost in their minds: that of doing all they can to benefit and protect the farmers and make farming life more profitable. But the responsibility for development of this plan to the point of being really a practicable success rests upon your shoulders. You are the bosses and can do as you please about this matter and truly in this respect you are the masters of your own fate. Your cooperation is registered in the amount of grain you ship to Farmers' National and without your support we cannot exist.

The Farmers' National here at Baltimore daily contacts practically all the processors, mills and consumers of large quantities of grain in the Central Eastern States. We have a clientel of trade that has been very loyal to us, and I know that some of these industries, and some among the very largest in this area, buy the major portion of their supplies from us. The criticisms that were formerly made against Farmers' National that it could not successfully compete with the old line grain firms is convincingly refuted by the facts in the case. We do not pretend that we sell all the grain to all the trade all the time, nor do we pretend that we pay the highest prices to the producers and shippers of grain all the time. Such a statement would be absurd and would be classified as being ridiculous in the eyes of anyone actually in the grain business, but the Farmers' National does pay a fair market price and does exercise a stabilizing effect in these markets by affording a constant daily market to the trade which many firms would not undertake. On certain occasions many firms have withdrawn from the market entirely, but the Farmers' National has steadily upheld a protective viewpoint and will maintain a market wherever it is at all possible and economically sound to do so.

The farmers of Maryland who market their grain cooperatively may always be assured of the fact that they are receiving absolutely honest grades and weights on all the grain they sell to us. Discounts are fairly and justly applied. Premiums are always given wherever it is possible. Account sales and supporting certificates are promptly rendered and the office at Baltimore is rendering a high class type of marketing service for the benefit of the shippers and buyers of grain in this area.

We trust that the work of extending the plan of cooperative marketing will be intensified and successfully carried out in all parts of the State. The statistics show that we have a great amount of work yet to be done, and it is by the coordination of plans and the cooperation of all efforts of all cooperative organizations in the State that this plan can be successfully carried out. Let's finish the job.

MR. NUTTLE: Thank you, Mr. Hassell. It goes without saying we should give the highest cooperation to this organization. If we do not use it and get help from it, it is our own fault. I know people who have received better prices from them than from the private concerns.

Now, Mrs. Williams was supposed to take charge at this time, but she is not here because of the serious illness of Mr. Williams, so it is my privilege to introduce Mrs. Davis who represented us at Nashville.

MRS. DAVIS: Mr. Nuttle and members of the Farm Bureau of Maryland, I am awfully sorry I am hoarse this afternoon. I am just recovering from the grip. So, if my voice does not carry, perhaps my husband will be in the back and I am sure he will prompt me if I go wrong.

I am sorry I could not bring the honors home to Maryland, but I did my best.

THE NEW DEAL AND THE FARM WOMAN

By MRS. HARRY L. DAVIS

Agriculture for all time has been considered the basic industry. All wealth comes primarily from the soil. History teaches us when civilization has failed, it has been revived through the reviving of its agriculture.

When agriculture is depressed, there can be no lasting prosperity for any group. The price of our farm products has been going down since 1920. From 1929 to 1932 the income of the farmers fell from twelve billions of dollars to five billions of dollars. The price of the agricultural products of the United States fell during that time to the lowest recorded records.

This decline carried down with it the price of our farm lands and chattels, many of which were held as security by banks for money loaned. These difficulties gradually reached the financial centers and, on March 3, 1933, the banks of our nation were in a state of collapse. The loss of the money income to the farmers was bad enough, but that does not represent the whole loss of buying power of the farmer. The farmer's real buying power is measured by the relation that exists between the price he receives for the product he sells and the price he pays for commodities he buys. This ratio is called the parity price. From 1914 to 1919 equitable parity existed, and the farmer could exchange a certain amount of his products for a fair amount of other commodities. This ratio was represented by the index figure 100, but the power of the farmer to buy manufactured goods has been more than cut in half since 1920. The ratio had shrunk to 48 in February, 1933. That is, we were paying more than twice as much for goods we bought than we were getting for products we sold, but interest on loans had not decreased and our taxes had risen 164 per cent. since 1914.

These conditions could lead only to bankruptcy. Literally speaking, many farms are bankrupt now. They have tried to keep on because they can raise most of their food and there isn't much else they can do. They go a little more into debt and materially lower their standards of living.

Within a period of five years nearly one-tenth of the farm lands of the United States have changed hands either by bankruptcy or foreclosure. One home out of every ten lost. Think of the effect this has on the families. Farm *women*, in particular, have tried to bear up under these almost impossible burdens. To their daily task they have become almost self-sufficient as to food and clothing. They have, however, given up radio, telephone and daily papers.

Many farm women who belong to Extension clubs are selling baked products—also fruits, vegetables, poultry and eggs on farm to the home markets. These women are not only taking care of their families, but are helping to pay the taxes.

The depression in agriculture reaches directly into the farm home, thereby causing the loss of opportunity and the curtailment of education for the farm youth. A lowered standard of living results, and this strikes at the very heart of the farm woman, who for the most part has worked gladly—not for the luxuries, but for the ordinary comforts and decencies which every American has thought to be his birthright.

The farm woman has added to her burdens the anxiety of seeing restless disheartened youth waiting for its rightful place in the social and economic order. These things caused by depression constitute a fundamental blot on the very core of our American civilization. Because of the social issues involved, because of what is happening to human beings as well, because of the economic loss, not only farm women, but women everywhere, should study and understand the agricultural situation in order that they may intelligently help with a program of recovery.

Society in general must understand that standards in health, education and living cannot be continually lowered on the farm without bringing hazards to society as a whole—in fact, to democratic government itself. Our nation cannot exist without its farms. The farmer's problem is everybody's problem.

Government is the logical agency to which people may turn in time of depression, and it is the agency which can direct the various groups in cooperative efforts. This is the essence of the New Deal. The attempt to harmonize the interest of the manufacturer, the farmer, and the laborer. The interdependence of modern civilization demands that we work together so as not to cause serious difficulty between conflicting interests. The individual will only prosper as the group prospers.

Many things have helped to bring about the present depression in agriculture—the passing of the frontier, machinery on farms, poor business methods and speculation. The World War was the primary cause. When the United States went into the war, it was soon seen that the farmer would have a big part, for everywhere there were placards reading, "If you can't fight, farm, for food will win the war—produce more, cultivate more acres." We did produce more and put into cultivation forty millions more acres. We not only fed our soldiers, but also the people of Europe, whose land was out of production. At the end of the war our agriculture, and, consequently, our industries, were geared up to the highest state of production and we kept on producing—thinking we could still sell abroad. We went into the war a debtor nation—we came out a creditor nation. Europe soon told us if she were to pay her debt, we would have to buy some of her products. We didn't want to do that; we wanted to sell to her, but not buy. Then Europe, fearing another war and thinking she might again be dependent upon others for food, started to cultivate her lands more extensively and that with the high tariffs we lost a big part of our foreign trade. Our surpluses kept piling up. We could not sell them abroad and we could not consume them at home. The more we had, the poorer we got, and longer grew our bread lines. There have been several things tried in the past decade to help the farmer out of his difficulties, but if you will notice they were to take care of the surplus. Finally in 1932-1933 farmers were getting desperate and began taking things into their own hands. There were riots and strikes. When Mr. Roosevelt came in, it was evident that more basic remedies would have to be tried than had been tried before. In this emergency President Roosevelt, Secretary of Agriculture Wallace, and farm leaders and their advisors in Congress, determined to make the first attack on the high surpluses of our basic products. Secretary Wallace said the way to prevent a surplus is not to grow it. Since the foreign trade was largely lost, the logical thing to do was to begin to take out of production the forty millions of extra acres. The Agricultural Adjustment Act was passed in May, 1933. To carry out the proposed program, the Agricultural Adjustment Administration was established. This offers the farmers the machinery for organizing cooperatively to adjust their crop production.

After a year President Roosevelt asked if we were any better off. Certainly we were no worse off. And those benefit checks have helped greatly in many places. So let us try to reach the goal, a parity price for the farmer—no more—no less.

Secretary Wallace said he thought it would be well for those who took the farm act out to the people to talk to the farm women also, to tell them how controlled crop production not only meant more money, but more time in which to live. I agree with Secretary Wallace. For it will be the well-informed farm woman who will be back of the farmer, who will help to put the New Deal over. It has been said that the test of a civilization is its estimate of women. If this is true, our civilization has met this test by granting economic and political equality to women. Women are full working partners of men in working out a design for living. In this partnership women will conserve the spiritual and educational order.

Our challenge is to combat false social and economic systems. It is our privilege to secure for our children economic liberty and stability that will advance the standards of living and give real meaning to life on the broad acres of our American farm lands. Courageous souls will meet this challenge and dedicate themselves to education, organization and cooperation so we may live with our neighbor in this changing world and yet not change from the ideals of Justice and Liberty on which our Government was founded.

America is still the land of opportunity.

MR. NUTTLE: That is mighty fine, Mrs. Davis. I am glad to see the time come when women are taking a more active part in the Farm Bureau. If there has been one weakness in our Farm Bureau, it has been the fact that it has been so much a man's organization. I hope from now on we will give them the same place in our locals as they have in the National organization.

(Some announcements were made at this time of a meeting of the Resolutions Committee in Room 360, and the place of meeting for the annual banquet of the Stockmen's Association.)

MR. NUTTLE: We are still a little bit ahead of our program. We are fortunate in having with us the most efficient lobbyist or representative that there is in Washington. At least, we feel that way. Anyway, he has had a hand in getting a lot of legislation through that has benefited the agricultural districts of the country. I think it is a great privilege to have Mr. Chester Gray with us, and I know you will be delighted to hear him at this time. Mr. Gray.

AGRICULTURAL LEGISLATION IN 1935

By CHESTER H. GRAY

Washington Representative, American Farm Bureau Federation

The President of the United States naturally can have a list of legislative projects which "must" be enacted. The American Farm Bureau Federation can logically have a list of projects for which it can "demand" enactment.

Not necessarily at the top of the Farm Bureau list, but of the greatest importance, is the proper amending of the Agricultural Adjustment Act so that it will be a permanent piece of legislation instead of being merely an emergency treatment of an acute depression condition which faced us in 1933. The act should be made elastic enough in its terms and provisions so that, as Secretary Wallace states it, we may have a "balanced abundance." President Roosevelt evidently has the same thought in mind when he refers in his message, recently delivered to the Seventy-fourth Congress, to "a balanced production," and elsewhere to "agricultural adjustment."

Many people, owing to the necessity to reduce the volume of farm crops to get rid of the gigantic surpluses of 1933, came to the conclusion that any and every law at Washington, whether for labor, industry or agriculture, must be exclusively based on reduction of production. No one need deny that owing to the conditions of 1933 the nation needed to reduce its ability to produce. This was all properly set out in the Agricultural Adjustment Act and in the National Industrial Recovery Act.

Now, however, we have reached another period in our agricultural development. The Agricultural Adjustment Act needs to be made what its title clearly indicates it to be, namely, an adjustment law, not necessarily a statute which compels reduction of production on any and every occasion and in regard to all farm crops. Furthermore the law needs to be amended so that the producers of non-basic crops, through the marketing agreement section, can have more benefits under the law than they have secured during the recent two years period. It may come finally that when the necessity to reduce production is not so evident as it was in 1933 that basic and non-basic crops, both, will be handled more through marketing agreements than by the vast sign-up reduction campaigns which we have had on the basic crops recently.

Perhaps the second measure on the demand list of the Farm Bureau Federation will be lower interest rates for agriculture. Some say that interest and taxes are comparative things and that if farmers get enough price for their products no worry is had relative to payment of taxes and interest. That is true, but unfortunately the monumental task of getting proper prices for our farm products is not easily accomplished. So the farmer is rightly complaining about the difficulty of meeting the fixed charges which accrue from annual interest payments.

There is no doubt that the revaluation of the dollar, so far as it was put into effect early in 1934 by President Roosevelt, had a dominating influence in raising the prices, not only of farm, but of industrial and labor products. The President did not proceed as far as the authority given him by Congress permitted. In fact, he went not much more than half way in his revaluation of the dollar. The Farm Bureau is demanding that the revaluation of the dollar, as proposed in Title III of the Agricultural Adjustment Act, be put into effect as a most effective aid in raising prices of farm products. The Farm Bureau demands also, in this same connection, that Federal revaluation shall have been accomplished to the desirable extent necessary when the commodity dollar plan shall be put into effect so that in years to come there will be a balance between the purchasing power of the dollar and the index prices of all commodities.

Federal taxes may not worry us much at Washington this winter, as there seems to be little demand for increasing them, and no one is advocating their decrease. It seems to be the thought of the nation, and perhaps of the administration, that it is better to borrow for a while yet, than it is to try to balance the budget by raising more taxes from the nation which is trying to climb out of the depression.

There will be the usual clamor for a Federal sales tax, of course. This clamor will be presented by certain minorities which have advocated it for years. But with the common, average citizen being forced, under a Federal sales tax, to pay much more taxes than he is now paying, it is difficult to visualize a Congress, or an administration, settling this burden on the average citizen.

The Ways and Means Committee of the House will search, and is searching, every available nook and cranny of tax legislation in its effort to increase the revenue for Uncle Sam. But this committee is not likely to raise the rates of taxes much, if any. It will cut off some more exemptions and deductions so that evasion of taxes will not be so much the vogue; it will perhaps try to levy some more so-called luxury taxes in the expectaton that they who buy over the polished mahogany counters can afford to pay; and it will be slow in removing any of the present taxes which are bringing revenue of sizeable proportions to the Federal Government.

Considerable attention may be given to the taxation of income from hitherto tax-free investments. It is coming to be more and more recognized at Washington that income and corporation taxes, if accompanied by a haven of refuge of tax-free investments, cannot be wholly successful. This plan of not trying to balance the budget by raising more revenue, but by borrowing until the country has gotten out of the depression and until the vast annual costs of unemployment and relief have subsided, naturally carries along with it a constantly increasing Federal debt. That debt is now approximately at thirty billion dollars. It is not unreasonable to expect that this debt will reach the financial stratosphere somewhere between thirty-five and forty billion dollars before the present plan of financing the Government shall be superseded with a balanced budget plan.

The Farm Bureau Federation is greatly displeased with NRA and the codes. Farm costs, owing to the codes, have gone up so rapidly that many who produce non-basic farm commodities have discovered in the last eighteen months that the expenses of farming have mounted faster than the price of products has increased. This situation traces back to the price-fixing and production control methods in NRA, to say nothing of the ease with which the anti-trust laws can be violated or neutralized under the operations of that new act. Price fixing ordinarily, by Government activity, is bad; it does not last long; it is sometimes permissible as a temporary expedient, but when it ends the readjustment is frequently more annoying than if governmental price fixing had not been indulged in. So price fixing, from the Federation's point of view, must go out.

Public opinion coincides with this objective, and even at Washington it is known that high administrative officials realize now that price fixing, monopolistic tendencies, and allied features of NRA, although temporarily permissible, are not permanently allowable. However, NRA will be permanent when amended so that its temporary and obnoxious features will be eliminated, and its desirable ones continued.

Child labor and sweat-shop conditions in industry have been given a solar-plexus by the codes. Many unfair trade practices have been eliminated and the right of labor collectively to bargain in its own behalf is distinctly recognized. All of these are desirable and should continue.

The Farm Bureau people demand that when Federal money is expended, even for such a meritorious thing as giving employment in times of depression, more wisdom in the selection of projects and in expenditures of the funds should be evident than has been seen during the recent eighteen months. It is gratifying to note that President Roosevelt last week, in his fine message to the Congress, was most emphatic in declaring that anything which approaches the dole must terminate, and that payment of Federal funds merely to keep someone employed, and without taking into consideration the future value of the project upon which the employment is occupied, must stop. This is exactly in accord with the position of the Farm Bureau.

One of the most important problems before the entire nation is that of land utilization. We shall demand in the present session of Congress that all activities of the Federal Government, which have a connection with land policy and land administration, must be centralized in the Department of Agriculture. It is ridiculous to see a Bureau of Erosion newly set up in the Department of Interior; it is equally ridiculous to see Subsistence Homesteads, which are primarily of agricultural nature, administered in Interior; it is annoying to discover efforts to shift the Forestry Service, which is so directly concerned with land policy, from the Department of Agriculture to the Department of Interior. The long-established Bureau of Reclamation is so closely linked into the land policy of our country that it must be administered no longer in Interior, but in Agriculture.

A national land policy, from the Farm Bureau point of view, has two vivid characteristics. First, it must prevent erosion, which is perhaps annually the greatest loss which the nation suffers; second, it must provide vast expansion of forestation for the double purpose of taking some land out of productivity which now should not be producing farm crops and to provide playgrounds, recreation places, parks, game and bird sanctuaries, to say nothing of an adequate lumber supply for future generations.

One of the major projects which the Farm Bureau has on its demand list is that of eliminating speculation on the commodity exchanges. Congress has enacted this type of legislation for the securities markets and it is so well known that speculation in commodities is as vicious as it ever has been in stocks and bonds that no longer delay must be suffered in getting this type of legislation.

We have a new system of transportation in the country, developed in recent decades. This system is provided by the joint development of the motor vehicle and of the hard-surfaced highways. There is great agitation now that owing to competition among highways, waterways, railways and airways they should be regulated together and placed somewhat on an equality as to rates and services. The Farm Bureau Federation demands that nothing of this character be done. It demands that competition be retained in the various transport facilities we have in the nation so that all citizens can get the largest extent of benefit possible out of efficient service in transport and in the lowest possible rates. The Farm Bureau fears that if all of these agencies of transportation be placed under one regulatory authority that inevitably they will, in a few years, all be carrying passengers and freight at the same rates, and those rates will be the ones which the highest cost method of transportation must have. If this comes to pass it will be another case of making the citizen pay "all the traffic will bear."

Some think that because the last two sessions of Congress enacted so much legislation no additional laws are needed. The shortest study of such measures as are now on the demand list of the American Farm Bureau Federation shows that in 1935, as in 1933 and 1934, agriculture in the nation is demanding legislation which will be as fair to farmers and to farm interests as are any laws enacted by Congress to the other great groups within our nation.

MR. NUTTLE: I don't know how he keeps up with all of that work.

We are supposed to have a discussion at this time, to be led by Mr. E. Tom Massie of Kent County. Mr. Massie will now be given five minutes to discuss Mr. Gray's address.

MR. MASSIE: Mr. Nuttle, Ladies and Gentlemen: I kind of think it is an insult to your intelligence to put me up here on this discussion after Mr. Chester Gray. I have heard him talk a good many times, and there is nobody in the United States that I love to hear talk on legislation more than I do him. He can always talk in such a clear way that anyone can understand it.

I would like to ask him a question or two. Mr. Gray, in the Maryland allotment, has any money ever come from the taxes to pay that, or has it come from the processing tax?

MR. GRAY: The benefit payments come exclusively from the revenue of the processing tax. They do not come from the general revenue of the United States Government. They come from the commodity.

MR. MASSIE: The reason I asked that question, I think as a farm organization we must combat the capitalistic newspapers of our country. The largest newspaper in Philadelphia two months ago had an editorial that led everybody who read it to believe that the money the farmers were receiving was being paid by the taxpayers of the United States. You know the term "blow-hard." Well, sometimes I think the writers of these editorials are just blow-hards. I think the farm organizations should have an educational policy—and say, suppose I know of some friends around me who read the city press, thinking that the AAA has been a failure. On December 28 the *Evening Bulletin* of Philadelphia, one of the largest newspapers in that city, had an article from Frank Kent in which he said it had been a failure, and he said—or anyone reading that article would believe that any benefits the farmers were receiving were coming directly from the taxpayers' money. We must watch these capitalistic papers. They are influencing the farmers in this State. I know in my county there is a lot of farmers pulling away, they do not believe in the triple A, because they read that paper.

Now, Mr. Gray, may I ask you one more question? We have a resolution before our Resolutions Committee—referred to it—asking that potatoes be made a basic commodity. Is there any way to work that out for potatoes in your opinion?

MR. GRAY: Of course, that would have to come by amendment of the law by naming potatoes in the list of basic commodities, and then to keep the money to pay the farmers the benefit payments, if they signed up to reduce or adjust their production to equalize demand. Under the present definition of the law the tax would have to be paid at the place of taxation—since potatoes are not processed, the law would have to be changed to refer to potatoes also, to change the definition of the processing tax as it relates to potatoes and make the tax apply at some other place. I do not know how that would work out. I suspect if we put the tax at the point of sale where so many farmers sell the commodity, it would be a very troublesome thing to administer from the size of it having to go to each individual farmer, troublesome just like the hog processing tax was in the Eastern part of the United States. We would just have to find a way to get around that, Mr. Massie, but putting the processing tax at the point of final sale, which would be in the terminal markets, and get it as far away from the point of first sale as possible. That is the difficulty of the matter, making any of these farm products basic commodities—cabbage, potatoes, and so on.

MR. NUTTLE: This is some good information for the Resolutions Committee. Mr. Massie pulled a right good trick. He got Chester Gray to make his speech for him.

MR. A. G. ENSOR: Mr. Chairman, Farm Bureau Members, Ladies and Gentlemen: I do not know what I could add to what our distinguished representative in Washington has said. I noticed that he calls these fellows that are operating this tax business "guys." I happen to be one of those guys, and I think you have a good many others in the Farm Bureau here in this State. I am sorry I have a cold, I hope you can hear me. I think the few remarks that I have to make will be confined to our Production Credit Association. I also want it to be understood that I am not speaking as an official of the Towson Production Credit Association, but just as a farmer and as a Farm Bureau member.

Mr. Gray has touched on the subject that has given the officers of this association a great deal of concern, that is, this small bargaining. We have had 100 per cent. cooperation from Governor Myers and Mr. Garwood, and our district agent in this territory. They have tried to help us in every way to help the little fellow, but we are confronted with a program, or a wrong, which is rather hard to do away with. We are not as familiar with any individual buyer, and do not know him quite as well as his local banker. We wish sometimes we could know him better. It is at this time, I think, one of the very important parts of the Farm Credit Administration of our State. At the present time we learn if a farmer purchases fertilizers, he has to pay 10 per cent. additional for his fertilizer, if he does not have cash, and on top of that he pays the interest on the price that he pays, so in reality he is paying around about 16 per cent. for his money, and we learn that there are very few farmers in this State that can afford to do that, they cannot pay that premium for the fertilizer that they are purchasing, so, ladies and gentlemen, it seems to me that your Production Credit Association is in a position to give great assistance to the farmers of this State for that reason, if no other.

As you know, we are in a position to loan considerable money in this territory. You folks here are familiar with your local Production Credit Association. We are having meetings in this territory at the present time. We will have a meeting at Towson on the 16th of this month. There is a meeting of the stockholders of the Towson Production Credit Association and I know that you are having them in the different parts of the State. I know that my Board of Directors would support me in extending to you who are in Towson district a very hearty welcome to attend our annual meeting, and I am sure that the other Production Credit Associations of the State would be very happy to have you also at these meetings. We are promised a speaker from the Baltimore Production Credit Association who will go into considerable detail as to these various movements on foot at the present time, so that the farmers in this territory will be better served in the future than they have been in the past.

I do not see any red lights, they are all in the rear, so I would like to continue a little further. There is another matter in my mind that Mr. Gray touched upon. That is in regard to legislation. I am speaking as a member of your association now. You know that at the present time the relief that you have received in your tax bill, your local tax bill, is an Act that is only for two years, and the emergency portion of that relief will expire on September 30, 1935, and if you are interested in securing as good or better legislation for the coming two years, I would suggest that your county representatives in the Legislature cooperate with your State Farm Bureau 100 per cent. If he calls upon you to help in this law, don't throw the letter in the waste basket, but immediately get in touch with him and give what support you can, and see if you cannot have the same relief continued, so you may at least have what you now have at the present time. I thank you.

MR. NUTTLE: Mr. Ensor touched on the very points I wanted to talk about. We will now hear from Mr. Wilbert Smith, of Frederick County.

MR. SMITH: Mr. Chairman, Ladies and Gentlemen: I am sure that your chairman must like to have me up here, he has called on me twice in the same meeting; he doesn't often do that.

I want to say something from the county-wide standpoint. In Frederick County we had a special Emergency Committee appointed. We did that two years ago; we secured the services of a mighty good lawyer in Frederick, a member of the Frederick Farm Bureau, and we drew up the bills that we wanted taken care of down at the Legislature, and we laid the bills on the table, and decided whether they were a good thing for the taxpayer. Then, we decided to take the bills down to Annapolis. On Monday morning eight of us left Frederick for Annapolis. We had the various associations in the county send communications to Annapolis, including the grain and the real estate boards, backing up our proposed legislation. We do not want to do anything that is not good for the taxpayers, and we should study our program and mark it out and then get behind it.

MR. NUTTLE: I think I will call on him a third time.

Now, I will take only a minute. What I had in mind to speak about was the fact that the 40 per cent. reduction we got in our taxes in Maryland by the State taking over 20 cents of the school tax and the maintenance of the county roads—that law would automatically go out of existence in September, unless something is done, and with the present situation in Annapolis with the Senate and the House Democratic and the Governor Republican, I do not know what can be done. I have this in the back of my mind—I do not know how the counties stand on it—I think Frederick County has told us—they do not want the roads to go back in the counties' taxes or they have changed their mind. My own idea is for the State to continue to maintain the dirt roads, or if that cannot be done, for a portion of the gasoline money, the State tax, be given to the counties to maintain its roads, and that would take care of that 20 cents which we are saving now.

Also the reduction from 47 cents to 30 cents, the amount paid by the local county for school maintenance, something we must take up. I think Mr. Smith's suggestion of an Emergency Committee is a very good one. We are thinking of that. Mr. Wise together with a Legislative Committee from each county—that is what we have as a recommendation from the Resolutions Committee.

Now, we will be glad to give a few minutes to one of our old workers here in Maryland—I would like for Mr. Melvin Stewart to come up here—we would be glad to hear a few words from you. I expect he knows more people in the State of Maryland than most anyone here.

MR. STEWART: Mr. Chairman, Mr. President: Friend Wise, has promised not to put the red light on me.

It is a great pleasure to get back here after four years of absence. I have been getting information to bring me up-to-date on a lot of this farm legislation. I was interested in this talk about county maintenance or State maintenance of dirt roads. I think I came from the State where that idea really originated—North Carolina. I want to say to you that is one of the best things that ever happened to that State—for the State as a whole to take over the maintenance of the roads. I know there is some opposition in my own home county on that proposition to maintain them by county tax funds. I think that has impressed me as much as anything else, as I have been sitting here today. I have enjoyed sitting here entirely free, listening to the enthusiastic talks, the splendid reports of your president, of your secretary. I was so pleased to hear of that splendid increase in membership. The only thing I am going to say to you is this. Every building or structure is no stronger than its foundations. You have been doing good work in building your foundations this year. You have got a lot more to do to get a larger number of farmers of the State in the membership of the Maryland Farm Bureau Federation. Now I am back in the State, I am willing to go back in the harness where I originally started in the Maryland Farm Bureau, offer my support in any way, shape or form to help in the interests of this organization and its effort to improve the future of the farmers of the State of Maryland. I thank you very much.

MR. NUTTLE: Thank you, Melvin, I was wondering if Mrs. Stewart would mind standing. (Mrs. Stewart stood up and the audience applauded.) Mrs. Stewart and I came from the same county. I have known her since she was very small, I won't say how long that has been, as it would be giving myself away.

The next thing on the program is the presentation of medals to the vocational boys. Dr. Blackwell will take charge of that.

Dr. Blackwell introduced the various boys as per the following list, Mr. Cockey presented the medals and shook hands with each boy as he passed.

LIST OF WINNERS IN THE MARYLAND FARM BUREAU-F. F. A.—PROJECT CONTESTS FOR 1933-34

(Awards made at State Farm Bureau Meeting at Lord Baltimore Hotel on Wednesday, January 9, 1935, at 4 P. M.)

Project	Rank	Contestant	High School	Award
Calf	1st in Balto. Shed	Williard Dern	Frederick	Gold F.F.A. Medal
	2d in Balto. Shed	Ray Valentine	Emmitsburg	Silver F.F.A. Medal
	3d in Balto. Shed	Lee Norris	Libertytown	Bronze F.F.A. Medal
Donor: Maryland Farm Bureau Federation.				
Calf	1st in Wash. Shed	Richard Remsburg	Middletown	Gold F.F.A. Medal
	2d in Wash. Shed	Stewart Walker	Damascus	Silver F.F.A. Medal
	3d in Wash. Shed	Ellwood Bowling	Glasva	Bronze F.F.A. Medal
Donor: Maryland Farm Bureau Federation.				
Calf	1st in Phila. Shed	Carroll Miller	Boonsboro	Gold F.F.A. Medal
	2d in Phila. Shed	Paul Horine	Middletown	Silver F.F.A. Medal
	3d in Phila. Shed	Rudelle Crum	Walkersville	Bronze F.F.A. Medal
Donor: Maryland Farm Bureau Federation.				
Sheep	First	William Wildesen	Oakland	Gold F.F.A. Medal
	Second	Joseph Byrd, Jr.	Poolesville	Silver F.F.A. Medal
	Third	Kenneth Renner	Boonsboro	Bronze F.F.A. Medal
Donor: Maryland Farm Bureau Federation.				
Swine	First	Daniel Poole	Middletown	Gold F.F.A. Medal
	Second	William Schaeffer	Poolesville	Silver F.F.A. Medal
	Third	Milo Cline	Middletown	Bronze F.F.A. Medal
Donor: Maryland Farm Bureau Federation.				

Poultry	First	August Lackey	Libertytown	Gold F.F.A. Medal
	Second	Ray Riley	Emmitsburg	Silver F.F.A. Medal
	Third	Jesse Bachtell	Smithsburg	Bronze F.F.A. Medal

Donor: Maryland Farm Bureau Federation.

Corn	First	Francis Barnes	Libertytown	Gold F.F.A. Medal
	Second	Ray Valentine	Emmitsburg	Silver F.F.A. Medal
	Third	John Frere	Glasva	Bronze F.F.A. Medal

Donor: Maryland Farm Bureau Federation.

Potato	First	William Wildesen	Oakland	Gold F.F.A. Medal
	Second	Harry Porter	Oakland	Silver F.F.A. Medal
	Third	Marshall Harvey	Oakland	Bronze F.F.A. Medal

Donor: Maryland Farm Bureau Federation.

Tobacco	First	Allison Roberts	Hughesville	Gold F.F.A. Medal
	Second	Ellwood Bowling	Glasva	Silver F.F.A. Medal
	Third	Bennie Roberts	Hughesville	Bronze F.F.A. Medal

Donor: Maryland Farm Bureau Federation.

Tomato	First	Audrey Christopher	East New Market	Gold F.F.A. Medal
	Second	Harry Harrison, Jr.	Hurlock	Silver F.F.A. Medal
	Third	Roger Paradee	Stockton	Bronze F.F.A. Medal

Donor: Maryland Farm Bureau Federation.

MR. COCKEY: I congratulate these young boys on their success in winning these trophies. They have been introduced to us as the future farmers of Maryland. Well, I will subscribe to that, but I would a great deal rather think of them in the light of the future leaders of agriculture in this State. I would like to say to you boys that the leaders at the present time did not have the same sort of training or the opportunities that you boys are getting from your teachers, and this organization, and the like of that, and I hope that it will all adhere in your minds and your spirit, and you will carry this thought forward that you are to be the future leaders of agriculture in this State when you get old enough.

Adjourned 4.30 P. M.

MEETING OF FARM DEBT CONCILIATION COMMITTEE

JANUARY 10, 1935, AT 10 A. M.

Mr. Charles T. Cockey, Jr., president of the Maryland Farm Bureau, presiding.

MR. COCKEY: This is the Debt Conciliation Committee meeting this morning—the State Farm Debt Conciliation Committee meeting. I had better explain how it came about. The Governor called in some of us and made the appointment of this committee and that is the reason he made me chairman—that is the reason I came to be chairman, because he named me.

This State Conciliation Committee, I am sorry to say, ought to apologize because we have not done more than we have. We have never functioned very actively. After we were appointed, we turned over to the Governor the names of the people whom we recommended in each county as being County Farm Debt Conciliation Committee. Shortly after we were appointed to the State Committee I used to get quite a number of letters from people who wanted our services, and I always referred them back to the county chairmen, and I suppose the county committees must have handled them pretty good because I did not get many inquiries, but we do not get any more of them now. I do not really know whether the County Conciliation Committees are functioning as well as they can or not. I know some of them are, and you will get the report from them today. It strikes me that if we had some funds and could call this State committee together and call in the county committees and talk this thing over, it might be very beneficial, but there are no funds for that and we have never done it.

MR. RALPH RUSSELL: What would you think of a man who would circulate around amongst these committees and carry the information as to what has been done in each committee?

MR. WISE: That will be answered later.

MR. COCKEY: I would like to get reports from the various committees. Some of them are doing a real job, and we want a report from them. I never had a report made. Did you ever answer those letters, Mr. Wise?

MR. WISE: About two months ago I started getting some figures to see what really had been done. I really feel that we have not done what we could, but we have done a mighty good job as these figures will show. All I am going to read are the final figures.

County	Cases Advised on	Cases Adjusted	Cases Pending	Debts	
				Original	Adjusted
Allegany	2	....	....	....	....
Anne Arundel	13	6	....	$52,032.00	$35,300.00
Baltimore	10	2	....	21,142.02	14,728.00
Calvert	....	....	....	....	....
Caroline	28	18	5	112,321.00	86,270.00
Carroll	....	....	....	....	....
Charles	3	3	....	11,832.00	9,209.00
Dorchester	30	17	13	123,499.00	85,424.00
Garrett	....	....	....	....	....
Harford	10	....	....	....	....
Howard	6	....	....	....	....
Kent	6	....	....	....	....
Talbot	9	1	3	30,000.00	14,200.00
Somerset	2	....	2	....	....
Queen Anne	3	1	2	....	....
Totals	122	48	25	$350,826.02	$245,131.00

Net reduction $105,696.02
2,500.00

$108,195.02

MR. WISE: I think without any publicity, without any pressure, these cases just came in, in many cases outside of the committee. We have done a mighty fine work in re-establishing these forty-eight farms and setting them up so they can look forward to the future with some hope. I am not going to give any details, I am going to let the men in the counties who follow us on the program give their own reports. If any of you want these figures, you may have them. Five counties have not reported, and eighteen have. Some of them are yet to be heard from.

The figures from Dorchester County show thirty cases of which seventeen were settled. That is the reason why we call on Mr. McKnight first.

MR. MCKNIGHT: In our committee we have gone on the assumption that if we could get the farmer to help himself we would be doing a better job for him than if the committee functioned. Now, I have very little to say about the activities of this committee. I was acting as secretary to the committee and the way that the cases were handled was simply this: After the application was made to the Farm Loan Secretary, and if he could get the necessary funds to take care of his indebtedness, all right, but if he could not, and his case would be a case for adjustment of his indebtedness, the secretary of this Farm Loan Association and myself would get together and make out a schedule scaling down the figures with the various creditors, and see if he could not go to them and have them make the necessary adjustment.

Now, we have never had to bring a case before the committee. All cases that have been adjusted have been done just that way. The Secretary to the Farm Loan Association and I would give him a schedule and he would go out and see his various creditors, and in that way these cases have been settled. The committee has never met as a whole on any one particular case, and I believe that even though the committee has not met, these cases have been adjusted.

Now, our cases are about like this, these cases adjusted by the committee—I say the committee, but it was really the Secretary to the Farm Loan and the County Agent—we adjusted them from $123,499.00 to $85,424.00, an adjustment of $38,000 downward. There were 65 loans applied for, of which 25 have been rejected, 17 adjusted, 10 paid in full, and 13 are still pending. That is the very small report that I have to make. The committee is ready to function if it is needed, but so far the farmer has been able to settle his own adjustment by going to his own creditors himself.

MR. RUSSELL: What are these 65 loans that have been applied for, to whom?

MR. MCKNIGHT: To the Land Bank only, not the Production Credit. I have these figures on the Production Credit. Total loans of $18,000. That is the Production Credit, that has nothing to do with the Federal Land Bank.

MR. RUSSELL: Have you had any applications from any man who already had figures from the Land Bank?

MR. MCKNIGHT: I cannot say that we have.

MR. RUSSELL: As I understand your procedure, some of them had already attended to their business.

MR. MCKNIGHT: I believe that the farmer has taken this thing seriously. He does not like to bring his trouble to any large group of men. He feels he is doing it better by doing it quietly. We have 13 loans still pending. Twenty-five have been absolutely rejected. Under no consideration can they get those loans through. Whether they will come back with another application or not, I do not know, but you cannot do much when they absolutely turn the thing down and say, "No, you cannot get it."

MR. DODSON: I would like to ask a question. What is the background of this movement, the Conciliation Committee movement? Where did it first originate? I would like to know the background of the thing.

MR. BREADY: It was brought to the attention of the National Government by the many foreclosures of farms, and the troubles in the West particularly—all sorts of things going on—and the President about a year ago sent out a general invitation to anybody who was in danger of losing his farm to communicate with him, and he received some thirty thousand telegrams, and that put the baby over in the arms of the Farm Credit Administration. I am going to answer you later in a little more detail just how the whole thing started, what it means, etc. I would like to correct the impression which is around, I do not know whether it is in Maryland or not, that these things are from the Federal Land Bank. The only reason we are in the picture the way we are is because we are the only ones who are lending any money.

MR. COCKEY: Now, we would like to hear from some of the other County Agents. Mr. Baker.

MR. BAKER: The Debt Conciliation Committee in our county has not been as active as it should have been. I do not know who is to blame, but we have had six requests, and of the six requests, one of these has been taken care of and settled, three are still pending and two were rejected absolutely. They were impossible, the indebtedness was entirely too much to consider. The committee in our county has met but once and, as I look upon the situation, it seems to me that the greatest handicap we have in getting these committees to work is that there is no money for expenses. All the time that they put on every individual case is time given entirely free, but they think they should have their expenses incurred in settling some of these cases and possibly they could do a better job. So far, every case that has come before the committee has been settled in our county.

MR. COCKEY: Thank you, Mr. Baker. Now I will call on Mr. McVean.

MR. MCVEAN: I think our report is in line with those already received. The committee meets partly, never as a whole. The work which has been done has been done by individual members of the committee. We find that there are three types of cases that come up for consideration, those where the collateral security notes are all signed and the creditors will not agree to less; the other group where it is so hopeless, that bankruptcy is the logical thing without any consideration; and the middle or third group where there is a hope for conciliation. I believe the situation in our county is something like this: ninety applications were made and about 60 of them (two-thirds) were granted. Of the 60, another third had to be adjusted in some way. There have been very few requests for conciliation service, but every few days I hear of another case suggested by one committee member or the other, and through the efforts of the Secretary of the Loan Association and the efforts of the farmer himself others have been adjusted by scaling the debts down to the degree at which he can take care of the mortgage. I believe most of the cases that have needed conciliation have been settled in the county, although five or six still remain. Five or six applications for loans have not yet been fully considered by the bank. The committee is ready to work and glad to work, but as expressed by other agents, nobody wants to force himself into conciliation unless the farmer comes and requests service. When they come to me I ask them, "Have you tried to do anything for yourself? You will feel better and be much less embarrassed if you can make your own arrangements." I think the committee is there and willing to function and glad to function when needed, but they are not in a position of trying to force their service on anybody who does not want it.

MR. COCKEY: We have another good boy. Mr. Grant.

MR. GRANT: Our situation down in Worcester County is practically the same as Mr. McVean has described. Our committee handled 20 loans, adjusted 20 of them amounting to somewhere about $50,000. The proposition down there was handled by three men, they do not meet particularly—one man in Berlin, one in Snow Hill and one at Pocomoke City. They look after their own territory. I might say that our secretary down there has done most of the work, and when he gets in a jam and cannot handle certain people, he turns it over to us and we try to get the farmer to do his own job if he can.

MR. COCKEY: We will now call on Mr. Bill Evans.

MR. EVANS: Mr. Chairman and Gentlemen: Dr. Symons asked me to talk upon our experiences with committee work, so I have come with a few notes prepared to say a few words regarding what we have done in Caroline County. We have done quite a lot of work in that county during the past year. There has been a very good committee there. We have Mr. J. L. Everngam, a merchant, and Mr. Wayne A. Cawley, a manager of a cooperative association and a farmer, and Mr. J. R. Chaffinch, a banker. Among them they had the viewpoint of most of the people that one could find. They seemed to be able to determine pretty well, I thought, the attitude which they would take. They determined the policy, and then eventually we carried that policy out with the various cases that came before us. Practically all the cases we had came before us from the Land Bank. I suppose that that is the case throughout the State. But the Land Bank and the Loan Commissioner were not able to loan enough to pay all indebtedness—they did not want to buy any farms, so they figured that they could not loan enough money to pay the indebtedness in many instances. Now, I suppose that is true throughout the State in the other counties.

We had this sort of an attitude on the situation; in the first place it was our duty in each case that came before us of reconstructing the farm debt situation of that farmer in such a way that he would be able to carry on, and we would save that man from three things—in the first place, save him from the embarrassment of not being able to meet the debts of his creditors at all, and secondly we would save him from the embarrassment—in some instance—of bankruptcy, or something very close to it, and in several cases save him from actual foreclosure if he could not meet his obligations, and in that way we felt that the committee in its work would save a man from becoming, not an asset to the community, but more or less of a liability, because we know the effect of having a man sold out and the attitude that he would take after such a circumstance.

Now, we used two or three methods. The first method was to have the man come in and meet the committee or some members of the committee, and then we would go over the situation and determine all of his creditors. It is surprising in some instances to find that the man did not know all his creditors. In others, he did not know how many judgments there were against him. We had one member of the committee go to the court record and look up the judgments, to find out how many of the notes had been entered as judgments. We found that each case was a case by itself, you could not use a stereotyped method. We first advised the man to see his creditors himself. In some cases they were able to meet their creditors and under our advice settle with them. In other cases we had some member of the committee to see his creditors. That sometimes worked. In other cases we had to do a lot of personal work with the creditors. I remember one instance where we had twenty-three to twenty-five different creditors in one case, and we were trying to get them to take 20 cents on the dollar. It was considerable trouble to get all those fellows together, particularly to agree on a plan since some of them were non-residents. We had found cases where non-resident creditors had served a New Jersey form note, and as soon as the farmer had signed the note they had entered judgment. That had been six or eight years ago, and those companies did not want to reduce their claim—they would not scale down. Finally we got them to do it, but that type of thing turns up every once in a while.

DR. SYMONS: What is that New Jersey form note?

MR. EVANS: I never saw any like it before. When a man is buying something on contract he will seldom read the nature of the contract. Most of us do not read the face of a note, but if we read the part in real small type, we will probably not be so anxious to sign one. The New Jersey form of note says that when the note is signed judgment may be entered immediately, they do not wait for the end of the term of the note. A good many of them were entered before their maturity. It is just as good as a second mortgage on the place. The equipment generally sold under this form of contract, and note was of such a nature that it could not be removed from the farm.

We found that this is true, that in settling a case you could talk very well with a man's creditors if there was money available. For instance, a merchant or farm supplies dealer would in most instances be glad to get a settlement on a reduced basis for an account that has been carried on his books for years. They were very glad to make a settlement in most cases. Occasionally you would find one who would not. In some cases we would find the mortgagee very unwilling to scale down but often they were glad to do so.

There were cases where the owner of the mortgage had a good investment. One or two were found to have exceptionally profitable investments through practices known as paper sharing.

As I see it, debt conciliation is rather important. It is not a case of our clients trying to get out of paying their honest debts, they feel that they would like to pay them, but yet at the same time when they know that they cannot, and they come to the committee for help, and if their debt is so great that they cannot pay it, or in some cases even pay the interest on it, I think these committees can be of great service.

Now, so far, our work has been almost entirely with the Land Bank loans. A great deal of other work of this nature can be done with the individual farmer. I do not know whether we will be called upon to get into the matter of farm debts adjustment generally or not, but there is a great field for service, and I think that not only in doing that are we doing a service for the man who owes the debt but a service to his creditors because otherwise they will not be able to get anything for the money that they loaned, or the money they have on open account, and if a Conciliation Committee is called upon to adjust such cases the service performed is not affecting the individual concerned but the entire community.

DR. SYMONS: What is your total number?

MR. EVANS: We had twenty-eight cases that came before us. Of that number, some twenty or twenty-two have been settled. The total indebtedness figures for the first 18 cases are: $112,321.00. This was scaled down to $86,270.00.

MR. MAGRUDER: How about the counsel in those cases?

MR. EVANS: The individuals apply to us in the first place. In many cases we find that they come to us to discuss where they can get some money to refinance their obligations. We gave them all the information available, how to get the loan, and when they got the loan granted (usually from the Land Bank) they came back. The Lank Bank wrote them a letter giving the names of the committee and most of them came to me as the committee's secretary and asked me to see some of the other members of the committee. We met and considered the case, occasionally to see if it could be worked without a committee meeting.

MR. MAGRUDER: Did the local lawyer seem to have a cool feeling toward the committee?

MR. EVANS: That all depends. In cases where they lost fees, they couldn't be expected to feel so cheerful. However, we found them reasonable when we were dealing with them either personally or as attorneys for other parties.

DR. SYMONS: Did you find any cases where the Pennsylvania Joint Bank or any other banks other than the Farm Land Bank had a system of scaling down?

MR. EVANS: Yes, with the Pennsylvania Joint Stock Land Bank and the other two in the area.

DR. SYMONS: They have all scaled down?

MR. EVANS: Yes, I found they were all very nice to deal with; of course, some a little easier to deal with than others. The basis on which they made their loans probably determined their attitude. We had very nice relationship with all three of the Joint Stock Land Banks. We have still some pending, some two or three cases, and I believe one of those is with a Joint Stock Land Bank.

MR. COCKEY: Thank you very much Mr. Evans, I would like to call on some more of these County Agents. If there are no more I will call on Mr. Frank B. Bready of the Farm Credit Administration.

MR. RUSSELL: From Washington or from Baltimore?

MR. BREADY: I represent both. I am glad to find a program here to tell me what to talk about. I got up in Spencer and I said I did not know what to talk about, and some one back in the room said, "Talk about a minute."

First I want to read a letter to Governor Myers from the President:

December 27, 1934.

My Dear Governor:

I am glad to have your report, and was especially interested in what you say about the many thousands of farmers whose homes have been saved through the efforts of local groups of public spirited men and women. As I recall it, it was about a year ago that the State Governors were asked to set up agricultural credit councils to deal with a most difficult problem—the threat of foreclosure, which confronted large numbers of our deserving farmers—and the generous community service rendered by them in helping farm debtors and their creditors to reach mutually satisfactory adjustments is highly commendable.

However, words of praise from you or me add but little to the only form of compensation they have received, i. e., the high satisfaction of knowing that they have contributed so materially to the renewal of hope in almost defeated men, the happy play of children made more secure in their farm homes, the grateful appreciation of thousands of farm families, holding their heads a little higher and looking forward with renewed confidence to the future.

Such unselfish effort and courageous shouldering of community responsibility is typical of our best American traditions.

Very sincerely yours,

(Signed) FRANKLIN D. ROOSEVELT.

Hon. W. I. Myers,
Governor, Farm Credit Administration,
1300 E Street, N.W.,
Washington, D. C.

Voluntary Farm Debt Conciliation activity had its beginning on October 4, 1933. A telegram addressed to the Governors of the several States by Secretary Morganthau, then Governor of the Farm Credit Administration, suggested that a committee be constituted in each State to give attention to the conciliation of excessive and distressed farm debts. As an aid in promoting constructive plans of action, letters were immediately sent Agricultural Extension Directors, State and national officers of the American Farm Bureau, masters of State Granges and other agricultural leaders, as a means of securing wider support for the voluntary program of farm debt adjustment.

Inquiry from the various State Governors made it necessary to offer suggestions for the organization of the work and to establish policies for its guidance. In so far as possible plans were developed from the experience already gained, especially in the States of Illinois and Ohio where State plans of action had been developed for dealing with the farm debt problem. During the period of a little over a year of this activity we have been able to gain from our experiences and profit by our mistakes, until at present I am prepared to offer you a plan of organization which I feel is equal to any in operation in any of the other States, and I might say, better than many. The plan is very simple and was first developed, in this Land Bank district which I represent, in the State of Virginia. We find that in order to maintain the proper contact between the county committees and the State Debt Conciliation Committee a paid representative should be appointed for every twenty to twenty-five counties. The backbone of this system of organization consists of regular appointed meetings of the county committees at least once every four weeks. This is no indication, however, that the committees may not meet whenever they choose, or that individual members of the committee may not continue to offer suggestion and ofttimes bring about settlements through their individual efforts. At these regular meetings the representative of the State committee is invariably present.

We find that he can cover his territory in exactly twenty field-working days, namely, from Monday until Friday, inclusive, of each week. Saturday is devoted to paper work in the headquarters of his district. Here in Maryland we have twenty-three counties and it would not be necessary to divide the State into districts, one man being sufficient to cover the entire State in his allotted time of four calendar weeks. The purpose of his contact at these regular meetings is to encourage the committees, assist them by carrying experiences (without mentioning any names) from one county to another and maintaining a definite liason with the State committee.

Largely through the efforts of Dr. T. B. Symons and Mr. C. E. Wise, Jr., a "tentative" approval has been received from the Maryland Emergency Relief Administrator for the necessary funds to develop this plan. Included in this "tentative" approval is an item to reimburse those committee members who desire repayment for all out-of-pocket expenditures incident to their attendance at these meetings. I am glad to be able to inform you that your State is the pioneer in having this particular item included in the budget. I am prepared, on behalf of the Farm Credit Administration, to devote as much time as is necessary to inaugurate this system and also to train the State representative in his duties. On behalf of the Federal Land Bank, I am also prepared to place a man at the disposal of the State committee to travel with the State representative and visit with the county committees for the purpose of explaining, in detail, the appraisal policy of the Land Bank and acquaint them with the many angles to which consideration is given in the making of a conditional commitment from the Federal Land Bank and/or Land Bank Commissioner. In other words, we find it of mutual advantage to let a Federal Land Bank representative completely cover the territory the first trip around and sit right in with the committees and show them exactly how the bank goes about making loans. After this first trip around, contact between the State committee, or through their representative, if they desire, may be maintained with the department which I represent in the bank.

The objective to be attained in this voluntary conciliation work is to secure as large a measure as possible of social and economic justice to both the farm debtor and his creditors. Approximately one-half of the farmers of this country have no mortgage indebtedness and two-thirds of the farmers who have mortgage indebtedness would not find it burdensome with a return to pre-war price levels. There are many worthy farmers who have an indebtedness beyond their ability to repay. It is these worthy farmers to which aid should be extended by the county committees. This does not infer the "scaling down" of any reasonable indebtedness, nor does it mean the protection of any farm debtor who chooses to use the depression as a means of sharp practice with his creditors.

Frequently, the distressed debtor is one of the most capable farmers in his community. He is in trouble because he was thrifty enough five, ten or fifteen years ago to make a substantial payment on his farm. This demonstrates his worthiness and value as a homemaker and he should not be lost to the community. It seems clear that if the legal rights of the creditors were exercised in all cases it would have a demoralizing effect on land values, community values and on the morale of the debtors. Taken as a group, probably nine out of ten distressed debtors are capable farmers who will pay more to their creditors over a period of years than tenants who might replace them.

The need for voluntary farm debt adjustment arises from the fact that no two debt problems are alike. This will be agreed upon by most debtors and creditors. The value is, therefore, immeasurable of a disinterested third party in a conciliatory capacity such as the voluntary County Farm Debt Committees.

The Federal Land Bank recognizes the value and importance of the work of these county committees and has selected experienced members of its personnel for the purpose of working with them and being of what cooperative assistance they may. As the Federal Land Bank may become the new creditor in many instances, this bank representative is naturally precluded from participating in the adjustment of individual cases.

During 1934, 278 conditional loans were closed in the State of Maryland aggregating $1,244,300. This does not mean the total amount of the loans made by the Federal Land Bank and/or the Land Bank Commissioner in this State, but only those loans upon which some condition has been imposed before they might be accepted. At present, there are 102 conditional loans pending, in which the debtor and his creditors have not been able to come to an amicable solution of their affairs, aggregating $527,900. Now, gentlemen, there is over a half million dollars knocking at the door right now. We know that a grocery store completely turns its capital over every thirty days. This figure, applied to a grocery store, would be a circulation of about $6,000,000. We have an instance in Atlanta, Georgia, wherein a banker marked a dollar bill received for cotton in September and the records show that the same dollar bill passed in and out of that bank ten times before Christmas. In other words, it paid ten one-dollar bills through that particular bank and no record was kept of its further activity out of the bank. I would suggest that we go back to our respective committees and make a concerted effort to get some of this money working in our committees.

The question arises as to how these farmers who have conditional commitments from the bank and/or commissioner, will know of the existence of your committees. In this connection I have to advise you that five days after a farmer is notified of a conditional approval of a loan, the department which I represent sends him a letter covering the conditional approval and notifying him of the names and addresses of the members of his county committee. In this letter they are urged to settle their own affairs, if possible, but in case of any difficulty, to apply to their committee, which is constituted to assist them. (Copies of this letter were passed out). On the first day of every month the Secretary-Treasurers of the National Farm Loan Associations are furnished with a list containing the names and application numbers of all conditional commitments in their Association which have not as yet been closed. They are requested to communicate with these applicants and if they are having any difficulty, to urge them to get in touch with their county committee. Forms are attached to this letter for the purpose of notifying the bank as to their activity. We welcome any suggestion as to further cooperation which we may extend in this direction.

You will probably hear from time to time that the Federal Land Bank does not lend enough money. This may be true. We may not lend enough money to pay all the debts of the applicant. It was never the intention of Congress to have the Federal Land Bank change shoes with the present creditors. Nothing of a permanent nature is to be accomplished by thus changing from one hand to another. When a distressed creditor has clearly demonstrated his inability to carry his present debt burden, nothing can be gained by lending him enough money to pay these debts and consequently remain in the same financial condition. It is true logic that you cannot lend a man out of debt.

The Farm Loan Act under which we operate provides that: "The value of the land for agricultural purposes shall be the basis of appraisal and the earning power of said land shall be a principal factor." You can readily see that we cannot accept as security suburban values, potential mineral values, timberland, or other values not purely agricultural. We have an instance of a farm (A) lying on the outskirts of a large city which we will agree has a re-sale value of $20,000 and of farm (B) lying fifteen or twenty miles out, which has exactly the same agricultural value as farm (A) and a money value of $10,000. All factors being favorable, the Federal Land Bank and/or the Land Bank Commissioner might lend $7,500 on farm (B) and all factors being favorable they might lend $7,500 on farm (A) based on its agricultural value. It is a delicate subject such as this which the Land Bank desires to make clear to you gentlemen as committeemen.

In most cases the acceptance by the creditors of the proceeds of a loan from the Federal Land Bank and/or the Land Bank Commissioner changes a discouraged, debt-ridden, beaten farmer into a confident, substantial, worthy member of the community who can reasonably be expected to pay all of his current obligations, maintain his family in a decent manner and eventually work out of his difficulties.

Now, if there are any questions I would like to answer them if I can.

MR. MCKNIGHT: Do these committees work with the farmers to adjust their debts except in cases where the Farm Loan is interested? Is there any work for the committee other than that?

MR. BREADY: That is a question for the FERA. If the county committees are working for the benefit of the Federal Farm Land Bank more than they are for the farmer. Anyhow the Federal Land Bank is the only one lending any money, and that is why it is in the picture larger than it ordinarily would be. There are many cases particularly in Maryland, where they feel they cannot get the full value from the Federal Land Bank. Always the mortgagee wants the farm run so the farmer can remain on it and work out his debts as much as possible. We do not know what the Administration has in mind for these committees. There will be over 2,600 of them. The bank fits into it now only because it is putting out the money.

Mr. McVean: Are these committees going to be permanent? How long are these committees supposed to function, what is there for us to do in a situation where the number of cases has been small?

Mr. Bready: That goes in with the necessity of getting expense. It is a fact in a great many cases there is hardly anything for you to do, and your State man will be a lot of help. He will find out the various things he can do. He can go to defunct banks and get a whole list of farmers in trouble and get in communication with those people. Maybe they have not made application to the Federal Land Bank, and he will know whether it is a Federal Land Bank proposition.

It is discouraging in a lot of counties as there seems very little for them to do without meeting. Necessarily the members are busy men, and they cannot drive forty or fifty miles to attend a meeting where they may be kept for some time, without knowing whether they are to get their actual expenses.

Mr. McVean: We received a bulletin last summer about a county officer, for the conciliation work, every 500 farms or more, or something like that. Is there such an animal?

Mr. Bready: There is such animal, it is almost like the dodo bird. We have to wait to see what Mr. Lemke has to say. They are supposed to be appointed in every judicial district. Some have been appointed, some not, some have been active. They are supposed to be the next step after these committees. Actually eight of them have been appointed in Maryland. There is supposed to be one for every county and a supervisor for the judicial district. In Virginia we have them and some in West Virginia. There does not seem to be much use appointing them until we find what is to become of the Act.

Mr. Baker: Is the personnel of these committees permanent? Is it a political appointment?

Mr. Bready: The appointment is supposed to come from the Governor.

Mr. Russell: Has the State committee the power to appoint where there is a death?

MR. BREADY: No, the State committee recommends to the Governor and the Governor makes the appointment.

In every county that we have had, where a committee has not been particularly interested and has not functioned it might be a good idea for the State man to bring that committee to the attention of the State committee and get a good committee functioning in that county. Some fellows get tired of serving and want to quit. If so, some one should be appointed in their place. We find the best committee is a banker, a lawyer and three or four farmers. It is not always best to have the County Agent, as he has so many other jobs to attend to. It seems like the County Agent has to attend to everything.

MR. ANDERSON: On farms such as we have in Western Maryland, the biggest trouble we find with our work is the fact that the Federal Land Bank will make the commitment against this farm land, supposed to be three-fourths of its real value, that is all the money we have to work with in so far as that case is concerned. If you go deep into the heart of the problem you will find on many farms personal property to almost the same value, some cases a little more valuable than the real estate. We bring in a bunch of creditors and virtually offer them three-fourths of the real estate value and say nothing about the personality. We are meeting with an awful lot of that.

MR. BREADY: Yes, I suppose you are. The Federal Land Bank will not lend on personal property. We are not going to put the bee on the creditors. You cannot expect a man to scale his obligations down until he has been shown that he is getting a fair value of all the man has. We respect that angle of it. Approximately two-thirds of the farmers of the nation who have mortgages would not find those mortgages burdensome prior to the pre-war time. There are many worthy farmers, and that is the job for this committee to work out. There are some who do not really deserve to be helped, and that is also the job of the Conciliation Committee. We do not say they should be kicked out, it is not our job, but there are some fellows who will apply who would be on the relief even if there were no depression. If you help them now, you will only have to help them again in a short while. The Federal Land Bank wants to make all the loans it can, but we have to reject some. Mr. Evans spoke of a case where they had to almost threaten a man to make him scale down a loan. We had a case something like that in the Middle West. A man had applied to the Federal Land Bank for a loan, and the creditors were not willing to wait and they sold him out and the school teacher in the community bought the farm for $7,000. Well, long about that time the Federal Land Bank came in with the commitment, and it was a little higher figure—say $7,500. The farmer went to the school teacher and offered to pay him $7,500, and he said, "No, I have been wanting that farm a long time, and I am going to keep it." He offered him an increase of $500 on his deal right there, and he would not accept. The farmer came to his Debt Conciliation Committee, and he told the story, so they visited this school teacher and they could not budge him. They knew that this farmer should stay there, he was a good man in the community, and they could not persuade the school teacher to give up the farm. They went to the School Board and the School Board called this fellow in and told him he was not being fair, but he would not agree to give up the property until finally they told him if he wanted to recommend someone to take his place they would listen. That showed him where he stood and he gave up the farm.

MR. EVANS (presiding in the temporary absence of Mr. Cockey): We thank you for your very good analysis of this situation. In regard to that matter of allowing the committee some expense, probably that could be worked out in Maryland. We scaled down on 48 cases, aggregating a total amount of $350,000, scaled that down to $240,000, without any expense. Probably we might be able to do a little more if it were possible to have someone working on this job that really did nothing else and had the interest of all at heart.

MR. ANDERSON: You did not answer my question about the personal property.

MR. BREADY: I thought a general answer might be better. The fact that the loan is figured on the income of the farm the fact that he had this additional personalty worth help in that income.

MR. ANDERSON: If you had loaned up to the maximum you could lend and it happened to be not only on the appraised value but on the income value of the farm, then you could not allow the Production Credit Association to place a loan second to yours on the personal property?

MR. BREADY: Not at the time the Federal Land Bank loan was closed. We do not want the man to carry too many debts. In so many years he ought not to owe a cent. That is only whipping the Devil around the stump. We do not want to have him too much involved.

MR. ANDERSON: Even though the Production Credit Association was to hold a mortgage on the personal property, and regardless of the personal property the man had, if the farm had not shown a working income, you could not allow us to place a new mortgage? We would not do it over in our county if not agreeable to you, we feel you fellows know what you are doing.

MR. BREADY: We are lending him on his farm. Suppose his personal property consists of a herd. We have often made a loan and allowed for that. That happens very often on dairy farms. It should be based on the earning basis of the farm as figured out at the bank, the figures the appraiser brings in. The crop figures are worked out on the 1909-14 basis, all the lines were running together then, the only time in history.

MR. ANDERSON: How can we as a Conciliation Committee get along with creditors who have secured loans on personalty worth practically as much as the real estate, and we offer them somewhere around 12½ per cent.

MR. BREADY: These creditors could take over the herd—they would probably not know what to do with it. You might have an extension agreement with the creditors whereby a certain proportion of the income of this herd be turned over to them, an agreement which could be put on record. Those creditors might be brought to see that they would get more income from that farmer working on his own land with his own herd than they could realize if they went in and sold him out.

MR. ANDERSON: But you would only be dealing with one man who has a claim against the herd.

MR. BREADY: The man who sold the stock?

MR. ANDERSON: Yes, and he expects to be paid pretty nearly in full the value of his debt.

MR. BREADY: They expect the principal to be paid in full instead of getting the income from the cattle?

MR. ANDERSON: If the cattle are worth it. The man that holds security against the herd, he is unwilling to settle, he wants to get what the herd is worth. You won't have any trouble with the man below him that has no security for his paper.

MR. BREADY: In that case, you have got to sell the idea to them that they are being put in the dairy business against their wish. It would be better for him to scale down and allow these unsecured creditors to get something. If he is forced to foreclose he will not get anything. Where there are these Joint Stock Bank questions, they will take the farm and the unsecured debtors will get nothing.

MR. EVANS: If the creditor has not loaned too much money on that property he is safe absolutely. In most cases he is a cattle dealer, and he can turn them over. Sometimes you can allow those things to stand. In some instances we have allowed chattel liens particularly to stand because they may be a real protection. For instance, he had a case where a man who was a very good farmer, a good manager, but he would buy everything he saw. That was his history in the past. There was a chattel lien on his personal property. From him we allowed that to stay on record; we thought it was possibly a good thing.

MR. BREADY: I believe I can answer that—in the composition of debts whether by the Federal Land Bank or otherwise, that does not include secured indebtedness. Maybe that would cover it. Any existing Federal liens on property, Production Credit, or some of the older ones are not included or required to be included in the composition required by the

Federal Land Bank when they make a conditional commitment. If there is a lien on that herd, we are willing to see that remain.

MR. ANDERSON: We have had no trouble with that. A few days ago, the last meeting we had, a cattle dealer held $6,000 against a herd, and that paper was seven or eight years old, and all the cows that he could find in that entire herd that belonged to him, and that he could attach, was seventeen. We did not have any trouble in getting him to scale down that $6,000 to $2,100.

MR. BREADY: That is true in most cases. No creditor is so openhearted that he is going to come in and give any farmer a scaling down because he liked him. He is going to do it because he has to do it. When you see a bank taking the proceeds of a loan from the Federal Land Bank, they are making a good deal. If they thought they could get another hundred dollars, it is perfectly reasonable to suppose that they would not take it. When this security seven or eight years old on the herd had depreciated to the extent that you offered them $2,100, they gave a whole lot of consideration to whether they could get more, and if they accepted it, they probably thought that was all they could get.

MR. ANDERSON: After the mortgage holder and the bills of sale are compromised, then what is left for the unsecured creditors? Practically nothing. Yet those unsecured creditors know that there is personal property belonging to that farm not at all covered by these other papers and they hope to get a bigger percentage here.

MR. BREADY: All the creditors should be brought together in one agreement. Sometimes they do not want to take the responsibility. Sometimes they turn all the proceeds of the farm over to a committee and the committee makes the distribution. Perhaps instead of burdening the committee, you might feel it was more of a job to be turned over to a local lawyer, and have an agreement written and put on record. In most cases that will satisfy the creditors. They do not want to sell the property, they only want to assure themselves that they are going to get all they can out of it.

MR. EVANS (who had been asked to assume the chair): I wonder if any of the counties have had any experience with the Frazier-Lemke Bankruptcy Law. We thought the best thing is to explain both sides of the law to any farmer who asked about it. Those farmers that come to the committee to discuss bankruptcy are generally advised on one side of the question.

MR. BREADY: We had one or two cases like that in West Virginia and one in Virginia. Once in a while it breaks out in a hot spot. The lawyers advise their clients only on one side of the law.

MR. EVANS: That is probably true in Maryland.

MR. BREADY: The judge on the bench is perfectly within his legal rights to explain to that man who comes in both sides of the law. He has to pay interest on the money, 85 per cent. of the appraised value, and any time during the first five years that the creditors ask for and receive a new appraisal, they may take either one they want. He has to pay the taxes during that period. Most people when they see that side of it know that they have been misled. It gives him some chance to turn around in those five years. He can go a long way in paying off during that time. In West Virginia we had a man going up there and trying to get all the farmers to sign up, he had seventeen of them signed up to go into bankruptcy under this law. One man took the time to get those seventeen men to come into a lawyer's office, a right big assignment, but they came in there and the lawyer explained to them the other side of the story—really the whole story—and the Washington outfit packed up their bags and left town. That was a big job for that community. We had the newspapers, we had some interested party telling them. It has its good points or it never would have been passed.

MR. EVANS: I find without exception that the committees in Maryland have done an excellent job. That is primarily due to the fact that almost without exception the personnel of those committees are really outstanding people. The committees have been chosen with considerable care. They are very well balanced as a whole. I want to pay a particular compliment to the Eastern Shore of Maryland. I think out of some 75 cases that have been adjusted since the Debt Adjustment started, 54 of those cases were settled on the Eastern Shore. That shows the committees over there were on the job. They have certainly been active and doing an especially good work. The attitude of the banker members of the committees throughout the State has been surprising. Often bankers hesitate in anything like this but they have been cooperative, and in most instances the commitments made by the Land Bank were thought to be fair.

MR. MAGRUDER: Were most of the adjustments made on farms where there were dairies or crops?

MR. EVANS: Both, possibly a larger percentage have been on farms where there were crops principally. One or two loans on cattle. I remember one case which we have pending at the present time, not finally settled. It is a case of a more or less hopeless aspect, but through the work of the committee we have been able to get the situation half-way under control so the man can continue to operate his farm and at the same time not be burdened with too much debt, a sort of an extension agreement you would call it, and it has worked out fairly well.

MR. ANDERSON: How do you fellows get hold of these cases, from the men themselves or from the bank?

MR. EVANS: That is something I meant to say awhile ago. At least this has been my experience in this conciliation work, we are very appreciative of the help of the Land Bank people, particularly the correspondents, they have given a great deal of assistance and have done a great deal of work in helping to reach these agreements.

MR. ANDERSON: Well, this morning is the first time I have heard of these extension agreements.

MR. EVANS: There are some cases, as I see it, that cannot be settled with the cash available. We recommend a plan whereby the debt should remain as it is, but with a scale down in the interest and carrying charges.

MR. MAGRUDER: According to the income of the farm?

MR. EVANS: Yes, we ran into a rather peculiar thing. We ran into one case where a mortgage had a limitation in it, I had never seen one like it, where it said that "in no case shall this mortgage be a larger amount than this farm can be sold for." The original mortgage was for $20,000. In other words, the liability was limited to the sale price of the farm.

MR. BREADY: That almost looks like he foresaw this time.

MR. EVANS: That brings us to another thing that our committee has been thinking about. There will come a time when we are going to get out of this period, we will be coming into a period where money will probably be easy to get again, and we will all forget these lessons we have learned. I think we should have an educational campaign in getting the banks, individuals or other people who have money to loan, to loan on the basis of a credit statement or a financial statement, and the power of that man's ability to pay, his income-making power. His standing in the community and his ability to meet his obligations in the past should not be his only basis for credit. Is that a part of the committee's work?

MR. BREADY: I think it is a very important part. If we go back to easy lending, we will be right back again where we were. I was in Spencer a short while ago, where they had a joint meeting of farmers and bankers, probably one of the most unusual things, held in a church for a particular reason. If you had heard them, some of them never had had a chance to express themselves before. One of the particular things that was brought up was that the banks were going to lend the farmers money, probably too much money, they were going to lend it based on their ability to repay. When they were talking that, I was afraid to say anything, I thought I would upset that meeting, so when they asked me to speak, I just told them a few jokes and let it go at that. After the meeting a farmer came up to me and said, "I am beginning to think that you people did not do us so much favor when you lent us so much money back in 1925. Sometimes the creditors will lend the money because they really want the farm themselves. That is where these committees can help. We are interested chiefly in the farmers.

MR. EVANS: I would like to hear some discussion as to how in the counties we could go about putting on some sort of an educational program, along that particular line. Should we do it individually or should that be done by the committee, or how should it be done?

MR. BREADY: Would you like a suggestion?

MR. EVANS: I would, yes.

MR. BREADY: Down in Virginia one of the State supervisors got up the idea of having a meeting for everyone to attend, inviting in all of the farmers, and I understand they had about six or seven of those meetings in the Southern part of that State to discuss this very thing. As a part of their program we sent a fellow down there from the Federal Land Bank to explain our side of it, and he went around to those meetings and explained to them our side. Delaware is preparing to do the same thing now, they are inviting in the bankers, the farmers, the County Agents, the representatives of the county and State committees for general discussion, as we have had here this morning.

MR. MAGRUDER: Has all this trouble come from the banks, or from the cattle dealers or what?

MR. BREADY: From seeing the thing as a whole, I would say, everybody. In some cases they have refused to take an amortization.

MR. MAGRUDER: The educational part would have to be quite broad to reach the farmers and the bankers too?

MR. BREADY: You will be surprised how the bankers will sit in and eat this stuff up. In many cases the bankers are on the committees and they are usually behind this movement.

MR. MAGRUDER: It would have been so much better if these committees had been functioning when the man was beginning to be involved and then they could have stepped in, they would have been much more effective.

MR. BREADY: That is right. It has gotten so in the West that an insurance company will not come in a county and foreclose the mortgage until they have laid it before the committee. Their policy of foreclosure is not as bad as it was. Of course, there are some cases where the mortgage should be foreclosed, depreciation of the security, abandonment of farms, and such things as that, where there is only one thing to do and that is to foreclose and take the loss. The insurance companies are getting down to that point, where they are willing to wait in the hope of at least getting some income from the property. They go to this committee and point out both sides. This committee is composed of representative men of the community, and they all decide whether there should be a foreclosure, then they go and hold the sale at the courthouse and everyone is satisfied. It has even been discussed that the Federal Land Bank take up their foreclosures with the committees. The committees are representative people, and they usually can see the whole thing.

MR. RUSSELL: It seems to me that we already have a paid organization for transmitting this information—it seems to me it is their function. Usually the farmer asks for information, and it seems to me if we could educate the farmers themselves.

MR. EVANS: I feel that the Extension Service is very glad to do everything it can on this particular problem, but how to go about it and how far we can go into this type of thing is another question.

MR. RUSSELL: Did not your outlook meeting have a bearing on that?

MR. EVANS: It did slightly, and at the same time I do not feel that this is the type of thing we have gone into before. I am just wondering if we should conduct any particular program, other than just personal.

MR. ANDERSON: Suppose you do, where are you going to tell these fellows to get their money?

MR. EVANS: It occurs to me in the last two weeks, I have been visiting a few bankers, and I find that some of them have a form, when a man wants to borrow some money, they require him to fill out this form, and that includes a statement of all his assets and liabilities, the type of farm, etc., and they have the same thing for other types of business. He fills in and gives an idea of his income, etc., and that gives a better chance to figure for the loan that you do not get from just talking.

MR. BREADY: That must be done nationally. I find it all around—the bankers are getting this information.

MR. ANDERSON: That is true, we found the same thing. The farmers before never listed all of their indebtedness.

MR. BREADY: Sometimes you have to cross-examine the man. This is all new to the farmer. He was never so heavily in debt before.

MR. MCVEAN: What do you think will be the part of the conciliation Boards in this debt adjustment matter? Are they going to have an active part or is that going to be handled through the Farm Bank?

MR. BREADY: That was brought up in the meeting. We thought of putting our committees and their committees together and trying to put the thing through. I believe the American Farm Bureau will cooperate.

These gentlemen will be furnished with copies of the Debt Adjustment notes.

MR. ANDERSON: I have not received all of them.

MR. BREADY: There were nine issues, the tenth is just off the press.

MR. MCVEAN: I received a few of them.

MR. BREADY: If this plan goes into effect, I will work quite closely with your local man, and I will see that those notes are sent to you. This State man will be in pretty close contact with me, and I will see they are sent out. I can give your State man copies of releases and they can go in your local papers.

MR. MCVEAN: I would like to ask whether these committees work with the Welfare Committees? I happen to be on both committees.

MR. BREADY: They do not work together. I never go to Pennsylvania any more, they made such a mess of things—they had these committees and a State man working out rural rehabiliation and they have made a mess of it.

MR. MCVEAN: Isn't their rural rehabilitation working out?

MR. BREADY: We are doing a bigger job than they are, and doing it with much less cost. In the last analysis, I am willing to make a statement that we are doing a bigger job.

MR. MCVEAN: It was my idea that it would not work out in 10 per cent. of the cases.

MR. BREADY: It applies to cases that will always have to be rehabilitated. There are some people you always have to take care of. You can rehabilitate them every six months.

MR. EVANS: Has Carroll County any report to make?

MR. BUSHEY: We had only three cases there, we were only called in three times. There are a lot of cases that want to do it, but they do not know how to do it and the like of that. It seems to me that everybody in trouble has got to have somebody to go to, and that somebody has got to be a man they are acquainted with before they will venture. That is the way we found it. There were two cases brought up last week, worthy cases to be considered, we referred them to Mr. Smith, representative of the Federal Land Bank.

MR. BREADY: If he is not holding out, if he is going to lay his cards right on the table and let the creditors do the same thing, they will probably settle their difficulties.

MR. ANDERSON: Do you ever call a bunch of creditors together in a case, and find out that this debtor has not said anything to his creditors about it, and they usually resent it?

MR. BREADY: I think he should go to the creditors first.

MR. EVANS: That gives the committee an opportunity to know before they set up a plan.

MR. ANDERSON: We thought he should see them first.

MR. BREADY: They resent the fact that your committee calls them in before they have had an opportunity to settle for themselves?

MR. BUSHEY: That would be my idea. Some of these men make a business of getting the fellow to compromise on a higher rate.

MR. RUSSELL: What has he to offer? He cannot offer any more than he has.

MR. EVANS: The committee, as I see it, has a definite responsibility, and that responsibility is to set up a fair and square program. The client has probably not thought of that. He might think—"here is Mr. Jones, he is very nice, I would like to pay him everything," and another fellow with just as much claim against him as this man he does not like so well, he wants to favor Jones against the other man. The committee then should step in and set down a fair apportionment on paper and give him a copy of what the committee thinks would be a fair composition of the debts. He should have a plan to take with him.

MR. BREADY: One answer to your question. We give out all information, we have had cases where a man has paid $10.00 for an application to the Federal Bank where they never expect to apply for a loan, they only want to use those figures in their own composition. One man came in and asked for his $10.00 back as he had fixed his matters up without us. Another said our list was worth $10.00 to him.

MR. ANDERSON: When this debtor goes to see his creditors, it has never been his idea to go to see them and let them know what his real situation is. As a result we have to make up a list of his debts, then when the creditor sits down and really goes over that list of debts he knows pretty well where he stands, and when he comes to the meeting he is ready to say "Yes" or "No" to our request.

MR. EVANS: We go so far as to make out the agreement and give it to the man to take with him before he sees his creditors.

MR. ANDERSON: Sometimes we cannot get an accurate list of the man's debts until we get all the creditors in.

MR. BREADY: Sometimes the judgments have been paid but never released from record.

After a little more discussion on this point, meeting adjourned one o'clock.

THURSDAY AFTERNOON, JANUARY 10, 1935

Mr. Cockey, President, called the meeting to order.

MR. COCKEY: Ladies and gentlemen, please come to order. The first thing on the program this afternoon is a song, and then we will proceed to seat the delegates.

Mr. Smith, Chairman of Credentials Committee, gave a report and called the roll.

REPORT OF CREDENTIAL COMMITTEE

MARYLAND FARM BUREAU FEDERATION

County	Paid-up Members	Number of Directors	Number of Delegates
Anne Arundel	4	....	1
Baltimore	444	1	9
Caroline	121	1	2
Carroll	98	1	2
Cecil	90	1	2
Charles	89	1	2
Dorchester	48	1	1
Frederick	398	1	8
Harford	185	1	4
Howard	91	1	2
Kent	171	1	3
Montgomery	83	1	2
Prince George's	91	1	2
Queen Anne	153	1	3
Talbot	147	1	3
Washington	66	1	1
Wicomico	108	1	2
Worcester	71	1	1
Maryland State Horticultural Society		1	1
Maryland Crop Improvement Association		1	1
Maryland State Beekeepers' Association		1	1
Maryland Vegetable Growers' Association		1	1
The Agricultural Corporation of Maryland		1	3
Maryland Tobacco Growers' Association		1	3
Maryland Stockmen's Association		1	1
Maryland State Horsebreeders' Association		1	1
Maryland State Poultry Association		1	1
Hillsboro-Queen Anne Cooperative Corporation		1	1
Maryland State Dairymen's Association		1	3

Respectfully submitted,

WILBERT L. SMITH, Chairman, Denton, Md.
C. E. WISE, JR., Sherwood Bldg., Baltimore, Md.
E. T. MASSEY, Massey, Md.
GUY PHILLIPS, Vienna, Md.
SAMUEL LINTON, Riverside, Md.
CLAUDE C. PHILLIPS, Quantico, Md.

Motion made, seconded and carried to appoint Mr. Benjamin Watkins III a delegate from Anne Arundel County.

MR. COCKEY: Thank you very much, Mr. Smith. Now, before introducing the gentleman who will preside over this meeting, I want to say that we had a ball last night, and I saw quite a lot of visiting going on. One of our good members lost his overcoat. Have any of you people found an extra overcoat?

MR. ENSOR: Mr. Harry Whiteford has that overcoat.

MR. COCKEY: Thank you, but I do think he ought to explain how he got that overcoat.

As I explained to you yesterday, we have some of our good board members to preside at these various meetings to give you an idea and let you see for yourself what kind of gentlemen we have on this board. The one I am about to introduce to you is known as our "grand old man in Baltimore County." He succeeded me as president of the Baltimore County Farm Bureau. The first year he had to make his annual address, and a day or two afterwards I met him and he said, "Mr. Cockey, how did you feel the first time you made your address." I said I felt pretty bad. He says, "I have had a headache ever since." He has gotten over all that. He can talk any place and any time. It gives me much pleasure to introduce to you as your presiding officer this afternoon, Mr. P. C. Turner.

MR. TURNER: When Mr. Wise asked me to preside this afternoon, he said he was doing that in order to push the program through, so I am going to try and follow his instructions.

I had the pleasure of attending the national convention in Chicago a year ago and I heard a lady speak. She was asking the people to elect a better class to our legislatures. She told us of going in a hotel in the State Capital very late at night and in the next room there was such a carousal she had to change her room. They told her it was the lawmakers making the noise, and after she finished her speech and sat down the chairman said perhaps it was Huey Long playing solitaire.

That lady is with us today. Her subject is "Farm Women and Farm Organizations," but she wants to change it to "Community Building." This lady works for the Farm Bureau, in the Extension Service of Louisiana, at the State University. I have the pleasure of presenting Miss Mary Mims of Louisiana.

THE FUNDAMENTALS OF COMMUNITY BUILDING

By MISS MARY MIMS, Louisiana

Friends of Maryland, I am just so happy to be with you again, I believe I can talk as loud without this loud speaker. You know down South we can speak awfully loud. At lunch I happened to look over and see Mr. J. W. Jones; I was having lunch with Miss Keller, your State Home Demonstrator; I felt very much like the little boy when the minister was visiting his home. The mother said to little Johnnie, "Johnnie, run and invite the minister in to supper or dinner," whichever it might be, and Johnnie ran and said, "Mr. Preacher, Mamma says come to supper." The minister said, "Johnnie, tell your mother I never eat just before I preach. When I do, I cannot preach very well," so Johnnie went dancing in and told his mother the minister did not want to eat until after services. His mother said, Now, Johnnie, you go to church and listen carefully to everything he says and come back home and tell mother everything he says." Johnnie came running home after services were over, and his mother said, "Johnnie, did you have a good sermon?" Johnnie said, "Mother, that preacher might just as well have et." Now, I have et.

I have asked Mr. Turner to make a little change in my talk and call it, "The Fundamentals of Community Building." That is my wŏrk and I can begin my talk right where I left off when I left home. I am reminded there of another little story. I have told this story before so, perhaps, you may have heard it. In a small community there were twins, Ted and Fred. They were so alike you could not tell Ted from Fred to save your life, as they grew to manhood. Ted was offered a position out of the community, and he left. Fred remained in the community and he fell in love with a beautiful young girl—most girls do fall in love, I don't know about it, but I am told so. Well, Fred falls in love, but in a little while he tells his sweetheart, "Goodbye," as most boys will. He had to go away. The next day after Fred went away, Ted came home, and Fred's sweetheart saw him, and she runs up to Ted, thinking he was Fred, and she says, "Oh, Fred, just to think you have come home so soon." Ted says, "Well, this is not Fred, but if this is where he left off, I am certainly glad to begin."

I want to begin with community work right where I left off to take the train to Baltimore. I love that word "community." Community work was started in Louisiana by the Farm Bureau, in the Agricultural Extension Department. You know the word "community" has come to have an international meaning, and I now think of a world community. We think of a national community, we think of a State community, we think of a county community, but I want to bring them all together in a world community. The world community is the circumference of your life and my life. The national community is the circumference of your life and my life. So is the State and county community. But what is the center of your life and my life? The center of that circle is the whole community in which we live. That is the center. If he had a balloon just as large as any of those circumferences, I could give it to your little boy six years of age and give him a needle and he could go to the balloon and prick it, and in the next moment that balloon would collapse. Why? Because it is all circumference. That same little boy could take that same needle and go to a solid ball, and that needle would not cause it to collapse because it grows from the center out. I believe if our counties—we say parishes in Louisiana—if our States, if our nation and our world communities are to continue, they must grow from their home community in which we live. That is where our life must begin. That is where we must become powers, that is where we must be big and fine characters.

So, I am going to say that in Louisiana we built our community from four fundamentals. We first think of the economical life, and then we think, when we go out in a humble community. This morning, coming into Baltimore, the porter said to a lovely woman and me, "Just don't stand in the aisle, go right into the drawing room." I went into the drawing room with this lovely woman who got off the train at Baltimore, and she said, "Oh, I am so glad to get back to Baltimore." I said, "Is this your home city?" She said, "Yes, but I have not been here for years but," she said, "I am so tired of the destitution and the desolation of the far South." She did not know that I was from the far South, but it is delightful to find anyone so delightfully frank. I said, "Where is the far South to you?" She told me and it was a neighboring State to my own State. I said, "What do you mean by desolation and destitution?" She described it to me, and still she did not know I was a neighbor to that State. She described the desolation and the destitution. I wanted to say to that lovely woman, "Well, if we were to go to New York City and we were to go into the homes of the people who work in the factories from six to six, and maybe longer hours, maybe you would find desolation and destitution there too." I am telling you this to show you that I work in the most desolate communities, I work in the colored sections, also among the French and Italians and Hungarians—I do not imagine you have all of those types here. I do not imagine you have desolation and destitution here, but we do, and it is my business to go and tell them that there is an economic life. You people of Maryland have never robbed your soil like we have in that country, like we have in Louisiana and this neighboring State. Our greatest problem today is to build back the soil. I want to say to you that one of the main things in building the community from the economic standpoint in the State of Louisiana—the only State I know—is first to get a vision of real patriotism. I believe that the farmer who leaves his soil in a better condition for the next generation than he finds it in is a deserving patriot. I believe we must get a vision of real patriotism in planning an economic life in those communities, and one of the first things that we must do is to build the soil, to protect that soil. Another thing, friends of Maryland, we must do in that State is to make people ambitious for ownership. We have had great plantations, enormous plantations, but that is a thing of the past. That is the old South, and now today we must get into the lives of the citizens, of the people of our communities, a real desire for ownership of the land. Not for the bank to own the land, not for the railroad to own the land, not for the State Government or the National Government, but for the man and woman who live on that land to love it, to own it. The greatest thing we can do for our men and women in Louisiana is to get them to own and love the land, to rebuild the land, the soil.

The next thing is standardization. Our agricultural people must get a vision of bringing their farm products up to standard. I was born out on a cotton farm. My father was a good farmer. My father educated eight of us pretty decently, and from a farm that meant a good farmer, even a successful farmer. But, you know, my father never thought of cotton from the standpoint of quality. My father always thought of cotton from the standpoint of quantity. It was always, "How many bales do you have?" not how good were they. We must begin studying cotton from the standpoint of quality as well as quantity. And you people in Maryland will be interested to know that we certainly do love the Bankhead Bill. Our communities have had a real vision of how they can build quality since they have had to reduce the quantity. And I want to say to you right now, when we voted nine to one in favor of the Bankhead Bill the great hope was to raise a better quality of cotton, bring it up to standard. We cannot get away from the law of demand and supply. I believe it is just as important to you and me as the law of gravitation. It should be studied in these communities just as much. One thing we must do in those communities, whether desolate or destitute, is to study cotton from the standpoint of standardization.

This morning we were handed a sheet on eggs and the egg market, and my mind went to Denmark, and I whispered to Miss Frysinger, "Wasn't the market at Denmark interesting?" I stayed in Denmark seven weeks and I lived in the homes of the people, and I saw each farm. They had to number and stamp their eggs. If a man should sell an egg there that does not come up to standard he is fined. I believe that is very important for you and me. We must get the farmers' wives and daughters to take pride in bringing our products up to standard. I could go into the schools in Louisiana, I could have told you whether the material was good or bad, but I could not have told you from my father's farm whether the material was good. I could not have told you fifteen years ago—I must not go back too far, you will know too much about me—I could not have told you anything about my father's products as a farmer, so in our communities we must study to bring the farm products up to standard. If we are building up an economic program, we must cooperate, no crop can be sold to advantage without cooperation. A bale of cotton may be sold without cooperation, but potatoes cannot, tomatoes cannot, eggs cannot, hogs cannot, so we must cooperate, and we must cooperate and know exactly in that community how much we have to sell and what the demand is for it.

One night I was way down in the French section, and the priest asked me to speak to the people. He said to me "Miss Mims, talk on 'cooperation' as hard as you can." I said, "Father, I shall do the best I can," and he said, "You know in our community we do not cooperate from the economic standpoint, from the health or civic or recreational standpoint." So he asked me to stress cooperation. I did the very best I know how, and after the meeting was over, a young man who calls him a "Cajunk," came up to me and he says, "You know, Miss Mims, I like that word 'Cooperation.' That is a very fine word. Yes, it certainly is a fine word, it is a big word." He says, "You know it is like the banan.' If the banan' stick to the bunch it does not get skinned." We know that is true, we never saw a banana skinned as long as it remained in the bunch. There is nothing so fine for you as a fine farm organization to work together in splendid community building from an economic standpoint.

The next fundamental is "Health." We must tune in with the Health Department. We have so many broadcasting stations, and they must all tune in with the small communities who pay the taxes, and become a receiving station for them. So we must tune in for our health plan and help the program we are having in our communities from the health standpoint. We have had baby clinics, all our babies are being examined in this community, being treated by the health unit of that county and State, so we work all the way through. And it is so important in our State that our boys and girls have balanced lunch baskets. We do not want our boys and girls below par. Not long ago in New York City I saw a little boy with his lunch basket, and in that lunch basket—I have told you that story in Chicago—I saw a bottle of soup and six great, big biscuits. I could see how that little boy could live in New York City and not have vegetables, could live in New York City and not have a bottle of milk but, oh, farmers and farmers wives, if you and I are letting the little boys and girls in the community go to school with unbalanced lunch with food fresh from the farm, we are not doing right by our community.

The next fundamental is our civic duty. That community should be made beautiful. Everything in the community should be made beautiful because the best of everything is beautiful, and the inferior becomes distasteful. Show me a boy and a girl in a community that is beautiful, and everything about a farm should be beautiful, I will show you a happy boy and girl. Show me a boy and a girl unhappy in the slums in a city, with slum standards of living, it don't mean the location necessarily. We can take these people in the slums of any city and we could change their standards of living, from a civic standpoint and make things beautiful. Down in Louisiana how do we do it? We have to go into the lives of people, though sometimes too late. I went to a community one evening, and I found what this woman on the train was talking about—this desolation and destitution, today you should see that community. We helped then to help themselves.

It would be foolish for a Louisianian to stand here and talk to you about the beauty of the scenery, and so I will talk to you about the other fundamental. That is the citizenship. I believe that we should have behavior clinics. I believe the boy and the girl who has good, splendid courage in refusing certain things detrimental to her should receive honor just the same as the boy or girl who has made the best record in football, in basketball or some other game. Why not hold up a high standard of behavior for our boys and girls? Crime does not just happen, crime comes from the social order, just as truly as we are standing here. When Mr. Turner mentioned—Oh, I want to say I have made misleading statements to boys and girls, and I too have said, "You are the future citizens of this community." If I could get it back I should never say that again. I should say, "That political rights are in the future," but I believe if you do not build twenty-one years of good citizenship, your political rights are in dangerous hands. What makes a good citizen? Honor, devotion, loyalty, courage and cooperation. Those splendid traits, they are invisible marks of a fine citizen. Let me say this to you, citizenship—capacity for citizenship begins with that baby in its mother's arms. I think I shall tell you the story that Mr. Turner referred to. I had been on the train a day and a night, and at twelve-thirty at night I arrived in the capital city, I knew when I got to this great big city to which hotel I should go, just as I knew here I was to come to the Lord Baltimore, and so I arrived there at twelve-thirty at night, and I walked in and registered, the clerk said, "Lady, we have a very full house tonight, and we have only two rooms left, one with a tub bath, and the other with a shower." He gave me the choice and I took the room with the tub bath. They called a negro porter and told him, "Show this lady up to room 726." I got on the elevator, we shot up to the seventh floor. We came out in the hall, and I followed the negro porter. When we got to room 726, he put down my bags, pulled the keys out of his pocket—and then right across the hall—I did not dream such vileness could come from the mouths of human beings. I had said to the boys and girls that I had never heard such unchaste remarks in my life—but right across the hall I heard this awful noise. When we went into the room I said to that negro porter, "I have never heard anything like that. Do you think it will continue all night?" He said, "Well, Miss, Legislature is in session in this town and all those gentlemen are the lawmakers, and their carousal may keep up all night." He says, looking over at me, "Miss, you is got a good countenance. I believe if I were you I would go down to the fifth floor." I took his advice and I went down to the room with the shower bath. He told the clerk down stairs, "This lady is not used to this carousal, she wants to go down and take the room with the shower bath." There at one o'clock at night, I, a white woman was being protected from the vileness of the lawmakers of that State by a negro porter. They were sent there to make the laws, to protect the community, but I was being protected from their vileness by a black, negro porter.

Years ago, a man died down in Louisiana—you see I want to give you some good points about Louisiana. He had been our representative, a Senator for years and years. He died, and I heard my father say to my mother, "I want to take all of the children to see him." When we were going over, my father said J. L. P. Wren has been a success." My mother said, "Why? Because he was a Representative? Because he was a Senator? Because he saved so much money?" My father said, "No, I will give you two instances. When you have a little boy five years old killed by a young negro fifteen years old—that happened to Mr. Wren, and a great mob of us came together, we were going up to lynch this negro boy. When we got to the plantation, Mr. Wren stood by the horse block, and he said, 'Men, you are my neighbors, you love me and you have come here because you love me, but I do not want you to put your hands on that little negro boy. Let the law take its course'." My father said, "The next instance, during the Louisiana Lottery, Mr. Wren stood up and said when they offered him $25,000 for his vote 'My principles are not for sale'." Now, that's what we need in citizenship. Let's be the good citizens, and the fine and splendid characters that our forefathers were. Let's have right recreation, beautiful recreation, let's recreate our communities, so that the boys and girls will have wholesome and beautiful recreation. We must be men and women and girls and boys of vision—but vision with a task. What is a vision without a task? Just a dream. A young man said to me, "I want to go back home. I have been hoboing around. I would not make my grades at the University. Now I want to go back to my father. My father wanted me to take charge of a filling station. I thought that was ridiculous when my dad was a man of wealth, so I refused, but now after a year's hoboing I am ready to go back to that filling station." He had his vision, but he was not man enough to assume the task.

We must remember that promise that we might live life more abundantly. Let's be recipients of an abundant life in the communities in which we live, rather than be recipients of a life that we cannot stand. So we may stand before the Great Being, and let Him say to us, "Well done, thou good and faithful man. Well done, thou good and faithful woman." Let's live that kind of a life—from the viewpoint of the four great fundamentals, economics, health, civic and recreation under the great Golden Rule, and soon depression will be a thing of the past.

MR. TURNER: I think Miss Mims has given us all something to think about. It shows that we men do not know anything about talking.

The next speaker on the program, I have heard, is very good. She is the Field Agent of the United States Department of Agriculture, and she will talk on "Programs our Farmers Want."

PROGRAMS OUR FARMERS WANT

MISS GRACE FRYSINGER
United States Department of Agriculture

Mr. Chairman and Members of the Maryland Farm Bureau Federation: When I realized that this was your annual meeting, which is a time when we take account of ourselves, and probably you are all making good resolutions for the coming year, it occurred to me, I was reminded of a negro who came into a drug store, and asked the druggist if he might go to the telephone. He called up an apartment building and asked for the manager. He asked the manager if he did not want to get a new janitor. The manager said, "No, we have a janitor." The negro said, "Well, don't you want a good janitor?" The manager said, "No, we have a pretty good janitor." The negro went on to say what an excellent janitor he was, what good references he had, and made a real plea for the job, asked the manager to give him a chance to discuss the matter of taking him over as the janitor. It was quite evident that he had been refused. When he turned away, the druggist said, "George, it is too bad. I am sorry you could not get that job." The negro said, "Oh, that's all right. I am that janitor. I was jes checking upon myself." I think not only on New Year's Day, but at annual meetings we are just checking upon ourselves.

Now, before I take up the topic which is on the program, I do want to congratulate the Maryland Farm Bureau and the American Farm Bureau on its recent action, which is being followed by you, in giving more opportunity to the women in the Farm Bureau. I know of what the women in this State have been doing within the Farm Bureau, and I congratulate the men of the organization that at last they are giving the women such fine recognition. As I heard the good news I was reminded of an occasion in Boston a few years ago. In Boston the Pilgrim Society every year has a dinner at which they celebrate the time when the Pilgrim Fathers landed, and their descendants meet together and have this very wonderful occasion at which they laud the fine characteristics of the Pilgrim Fathers. They told of the difficulties they had encountered, with the rigorous climate, of the Indians and all the trials and tribulations which the Pilgrim Fathers had endured. Finally, a woman got up and said, "Mr. Chairman, I would like to say that everyone has paid a great tribute to the Pilgrim Fathers because of what they endured because of the Indians, the climate and all those other things, but," she said, "no one has ever mentioned the Pilgrim Mothers yet, and they had to endure just as much as the Pilgrim Fathers, and they had to endure the Pilgrim Fathers, too!" So, I think the women in the Farm Bureau have gone along fifty-fifty with the men, and I am glad you are now getting this fine recognition from your National Association, and as I talked to the women this morning, I said the same thing in your State.

Now, before I discuss the topic on the program of what farmers want, I want to make a little preliminary statement. I believe that farmers believe in the decent standards of living for their families, I believe that farmers are no different from the people who live in the cities in the things that they desire for a decent standard. There is no double standard. I believe that farmers do not want to demand that the nation give them a living, I think they agree with the President that the United States owes no man a living, but rather an opportunity to make a living. I believe that a farmer does not ask the cost of production for every farmer, but for those farmers who are willing to utilize every opportunity and resource to help him produce efficiently and plant intelligently. I believe farmers recognize their responsibility to the nation, not only to produce the fruits and vegetables which are grown upon the farm, but also to contribute their leadership, their fine feeling of national and international well-being, and I believe that farmers want to cooperate with other farmers, with industrialists, with all groups toward the better life for all our citizens. One of the most potent resources for well-being in our country at the present time, I believe, is to strengthen our farm organizations, and I believe that those of you in the Farm Bureau of Maryland being so much nearer the National Capital, do realize the need of development in that field as never before.

Some one asked Samuel Gompers if he thought farmers could cooperate, and he said, of course they could, if they were given as great an opportunity as other lines of industry, opportunity of contact with each other the same as any other group. Those of us who have been working with farmers during the past years when they have had such very poor roads, and more recently when we have had better roads, know how much faster the farmers have improved in that field, they are just as willing to cooperate as any other group.

I think we all realize this is a day of planned life, planned agriculture is necessary, planned industry is necessary, planned organization is necessary, and planned living is necessary. We can no longer go on with our agriculture, or any other field of endeavor as we have in the past. We must accept discipline and we must accept responsibility, and sometimes as I think of organizations, not only farm organizations, but all the other groups, I think we can plan well for the organizations. Sometimes we fail to take the responsibility that comes with group action, and even more the discipline that must come with it. If we wish to be Robinson Crusoes in our lives, and live alone, that is all right, but most of us do not like that.

Now, in planning our programs, if we are going to have a planned program it must be on the basis of a common economy and social organization. I am so glad that the women are coming into the active work of the Farm Bureau as never before. In the old days when we were attaching so much importance to physical strength, the problems had to be settled by physical strength and brawn was the most important factor.

We no longer have that situation, and in this country we are planning our way of living on a social basis. Brawn is not the important factor now, brain has become more important, and I will not grant that women have any less brains than men, they have made no less a contribution in their own field than have the men down through the centuries. In the good old days the man had to bring home the bacon, and the women had to take care of it. But from now on we must think in terms of fifty-fifty. Down through the ages the women have had the responsibility for the educational, the spiritual side of life. Just as Miss Mims has said, all those things are needed, plus this well-being. I agree that in this day we are really thinking too much in terms of things and too little in terms of people who use those things for the satisfaction of the human being. I believe we must change that attitude. I think we must realize that we are in a state of flux. I think we must realize that we still have local, as well as national and international problems to solve. We must look at the matter in an individual aspect as well as collective. We must consider the psychological side just as well as the logical. The trouble with many of our plans has been we have looked upon them logically rather than psychologically. I think that in our planning for a better social order, and a better economic order we must realize that no matter what we do in the way of adjustments, we must base our plans upon sound principles of human management, and increasingly stress the human well-being with the crops and the stock and the equipment in the home, and whatever we may do as a means to that end we must have economic betterment, we must minister to better economic conditions. We must have more comfort in the farm house. We must have a living room which ministers to the comfort of the family, for the farmer who comes in tired, for all of the family. We must have a better kitchen. We must have more vacation trips, recreation for both men and women, all the good things of life. We must have the social satisfaction of living, music and art, all those things that you people in Maryland need. We must have better health conditions, more libraries, a larger outlook on life, more cooperation along planned agriculture and industry and living. Continually try to develop all those sides of living that take in our own well-being, and that of our families, and that of people employed by us. A program that takes into consideration the development of leadership and also followers, and sometimes I think that those are the members of our organization that figure most. When we have appointed leaders, we owe a very real responsibility to those leaders.

In conclusion, I would say that we need in our farm program, not only the economic well-being, we need the confidence of life, the physical well-being, with health, some of the satisfactions of life, that make us be alive, willing to do the tasks on the farm and in the home as a means to an end. We need to build up the "good life," to make possible what Secretary Wallace has said upon the subject of "Life of America," planned agriculture, added responsibility and a richer life.

MR. TURNER: We are going to make a little change in the program at this point and call on Mr. Wilson, as I believe he has to leave us early. Prior to the Civil War the farmers ruled this country. After the Civil War until the World War industrialists ruled the country. Since the World War, the bankers have ruled the country. We feel now that it is about time that the farmers get back some of the rules. We do not want to rule the country, all we want is a fair share of the rulers. We have in Washington men who will help us to bring that about. The man I am about to introduce to you is one of them, the Assistant Secretary of Agriculture, Mr. M. L. Wilson, who will speak on "Some Agricultural Problems Ahead."

SOME AGRICULTURAL PROBLEMS AHEAD

By M. L. WILSON

Assistant Secretary, U. S. Department of Agriculture

Most of us have a clear memory of 1932, the year before the Agricultural Adjustment Act was passed.

There were then backed up on the farms and in the terminal markets—unabsorbed despite extremely low prices—more than 400 million bushels of wheat, more than a year's cotton crop, two to three years' tobacco production and other heavy supplies of farm products. The farmer found himself with greatly reduced purchasing power. The exchangeability of the farmer's dollar was 53 per cent. of the purchasing power of the dollar in the pre-war years, 1909 to 1914. We can recall without difficulty what this meant to the ability of farmers to pay their debts, their taxes, to buy food and clothing and the products of our city stores and factories.

The terrific collapse in farm prices, crushed by surpluses of unsold products, ruined thousands of farmers and menaced the security and economic independence of the rest. On top of this it contributed to the paralysis of American business activity.

A description of the complex and cumulative causes of the situation in which we found ourselves in 1932 is but a description of the unheaval in world affairs produced by the World War and of post-war policies followed by this and other leading nations. The more obvious effect was the loss of our export market for agricultural products and an enormous contraction of farm purchasing power as compared with that of highly organized industrial, business and labor groups.

Prior to the World War we had been a debtor nation. Year by year the value of our farm exports roughly equaled the payments of interest and principal on capital from European and other countries invested in this young, expanding and vigorous nation with its rich and diverse resources. During that war the demand for our farm products in Europe increased greatly and soon instead of owing European investors large sums we found we had become a creditor nation, with Europe owing this nation and its citizens great sums.

A large creditor nation, if it expects payments of interest and principal, must expect to receive them mainly in the form of goods and produce from its debtors. Voices which suggested this in the twenties were voices crying in the wilderness. The dominant voices at this critical period called for higher tariffs. And higher tariffs triumphed. The farmer, selling in a world market with 50 to 75 million acres of land under cultivation to supply Europe with its products, found himself with bankrupt customers. The tariffs prevented the products of European factories from entering this country in a volume to sustain a continuation in our shipments abroad of wheat, cotton, tobacco, pork and other products.

An honest and diligent effort is being made by your President and his administration to reopen foreign markets. But it is no easy task. Businesses have been built up behind the protection of tariff walls which have contributed so greatly to the dilemma of agriculture. The President has made an important but frequently overlooked contribution by definitely halting the trend to higher tariffs. But until we turn to a policy which will make possible more imports in some way or other, the farmers of this country will have to follow a realistic course and recognize that they are not producing for a limitless foreign market.

Before we examine the period which began soon after March, 1933, I want to call your attention to another figure in the picture of agriculture until a vigorous and dynamic program of action was substituted for the previous administration's policy of apathy.

I want to call your attention to some important changes in the relationship of agriculture to other economic interests which occurred gradually over a period of years. While farm prices, falling in response to continued heavy production and a loss of markets, proved to be as weak and brittle as putty, the prices of other products exhibited many of the harsh, unyielding qualities of steel. The contrasting qualities of steel versus putty can be easily seen in the relationship of the prices of the things farmers bought compared with the prices of the things they sold after the depression set in.

We cannot ignore the fact that farm prices and the prices of most things farmers buy are determined in such entirely different ways that to ignore these differences is to invite disturbances in our national economy. Farm prices have been left largely to the free competition of the open market place. It had been assumed that the law of supply and demand would work out fairly and satisfactorily in the case of wheat, corn, cotton, tobacco and other produce from the farms.

Many years ago, when our economic system was much more simple than it is today, both agricultural and industrial price fluctuations were largely in response to the forces of an open and free market, but modern industrial organization has changed all this. In one industry after another free competitive price making has been practically eliminated and for a large number of industrial products it is no longer true that prices are determined by the free and unhampered operation of the law of supply and demand.

It is now widely recognized that agriculture, operated on an individual family basis, does not respond to lower prices or slackened demand as does industry—by curtailing production. The farmer is his own employer, for the most part, and he can do little to reduce his costs by discharging his labor price. Moreover, his fixed charges are heavy, and his inclination is to continue producing despite low prices. Industry, on the other hand, cuts its pay rolls; and this performance is just as important a factor in economic changes affecting agriculture as in the loss of foreign markets.

Between 1929 and 1933 average prices of agricultural products fell 63 per cent., while production was reduced only 6 per cent. By way of contrast, prices of agricultural machinery fell 6 per cent., while production was reduced 60 per cent. Prices of motor vehicles fell 16 per cent., while production was reduced 80 per cent. In the case of cement, prices were reduced 18 per cent. and production 65 per cent. Prices of iron and steel fell only 20 per cent., but production was curtailed 83 per cent.

You will notice that farm prices acted in response to market forces, but the prices of non-agricultural products showed great resistance. This is due to the fact that for more than a century business groups through collective action have been gradually substituting what they regard as fair competition for the classical ideal of free competition, while agriculture has continued substantially on a free competitive basis. Business has not abolished the law of supply and demand; it has adapted it to its own purposes. Would business and labor be willing to return to free or "kill and eat 'em" competition, or will it insist upon its fair or "live and let live" competition? There are absolutely no indications of any tendency for business and labor to return to free competition. Evidence multiplies, on the other hand, to support the view that its collective power will be strengthened even if it should become more amenable to the influence of government.

For my part, I can see no reason why business and labor should give up its collective controls; but if they do not and should not do so, there is no alternative for agriculture except to master this technique for its own protection, unless it wants to lapse into a sort of exploited peasant economy. In the interest of the national economy both groups should either act collectively or neither should do so.

It was in the face of a situation, complicated by the loss of foreign markets by our transition from a debtor to a creditor nation, during a period when tariffs were being increased, and after a long and subtle change in price determining practices, that the Agricultural Adjustment Act became law in May, 1933. It was new, but it came forward in a spirit of determination. It had thirteen years of earnest effort by farmers to find a way to approach their problems cooperatively and realistically in its background. A great deal of thinking and study lay back of its provisions. It didn't just pop out of a box.

It authorized the Secretary of Agriculture to set up and administer a plan of action designed to restore to farmers the pre-war purchasing power of the domestically-consumed portion of their basic crops. The plan included a democratic method of farmer-adjustment of production to effective demand. To make it possible for individual farmers to adjust their production, the plan provided for the distribution of benefit payments derived from taxes collected through processors.

In passing it is important to note that since the World War various governments had tried price-raising measures for certain agricultural commodities, unaccompanied by production control. Notorious examples are those of Brazil for coffee and Japan for silk. The inevitable result was increased supplies to aggravate an already bad situation. Confronted by this experience, our Government wisely included production control as an important part of its farm-income-raising plan.

I recall that when this plan was debated in Congress its opponents said that it was economically sound in principle, but administratively unworkable. I have carefully preserved a brief written by a group of honest and intelligent opponents in which are listed twenty-two reasons why adjustment contracts and processing taxes could not be administered. Among other things the brief said that farmers would not tell the truth about their last production, and for this reason it would be impossible to establish individual allotments. They apparently operated on the theory that all farmers were like the one who put a stone in the bottom of his potato sack.

I think that in looking over the Adjustment Act during its first twenty months of existence we should examine it from two particular angles—the method employed and the results obtained. Has a good method been used? Do the results justify the effort?

I would be the last to contend that a miracle has been performed and that absolute perfection has been attained in everything that has been done. We have all had to experiment with a technique never applied before. But I believe that so far the adjustment program has gone forward creditably. The farmers of the country have responded in a way which has demonstrated that they can and will cooperate.

There are a variety of measures which can be applied to the results. We know that more than four million cooperative control contracts have been signed by approximately three million farmers. Five and a half million checks for a total of more than a half billion dollars have been mailed to these farmers. Marketing agreements and licenses applying to more than sixty commodities are now in effect or pending. During the past year between thirty and forty million acres of land, formerly producing for export markets, were retired from the production of crops of which there were surpluses. Despite the worst drought in our history, farm income for 1934 increased six billion dollars, compared with five billions in 1933 and $4,277,000,000 in 1932. It is important that supplies are more nearly in line with effective demand than for many years in the past and that the administration, by attacking the problem with vigor, has moved vast quantities of surplus goods into channels of use for unemployed.

What of the method employed? It was intended to be as democratic, as near the cooperative ideal, as the speed of action and seriousness of the situation permitted. That intention is still the intention and we can look confidently towards further decentralization of authority and towards further employment of cooperative principles. The fact that three million farmers have come together as members of about 4,000 county production control associations with officers selected by the farmers themselves to administer commodity programs, is testimony to the ability of farmers to proceed along democratic lines in conducting their business. Utilizing the centralizing powers of the Federal Government, these farmers as a group have been able to direct their own adjustments in production, meet the emergency resulting from the drought, and guide the policies under which the Act is administered. The referenda principle is being widely employed. One of the real satisfactions of working with this program lies in the fact that the average farmer appears to be better posted on the meaning and the programs centering about adjustment than the average stockholder is in the operations of a corporation in which he has a substantial investment. Perhaps that is not a fair comparison. The fact is, however, that the Adjustment Administration is convinced that it can succeed only if farmers are informed. It believes that the road towards greater triumphs of cooperative farmer activity lies in complete information and understanding in exactly the way that the functioning of a democracy must depend on an informed public opinion.

Looking towards the future, I do not believe that farmers will want to give up agricultural adjustment, but I believe that it will develop through maturing processes even more vigorous expression of the democratic principle. I believe it will become more flexible. In the programs for next year we are moving in the direction of controlled expansion of production. The corn-hog program for 1935 provides expansion of both corn and hog production above the production levels established by the 1934 program. Under this program the maximum corn acreage to be planted in 1935 is 90 per cent. of the base acreage, in increase of about one-eighth over the 1934 maximum, permitting the production of about 250 million bushels of corn over the reduced requirements for livestock with which depleted feed reserves may be replenished. Contract signers will hold the number of hogs produced for market from 1935 litters to 90 per cent. of their base production instead of 75 per cent. as provided by the 1934 contract. This is about one-fifth larger than last year. Adjustment payments are expected to range from 150 million dollars to 165 millions. This program was adopted after a referendum of producers.

The third cotton program for the South provides for expansion in 1935 over plantings of 1934. The wheat program calls for planting 90 per cent. of the base acreage instead of 85 per cent., which the program for the past year called for. The tobacco programs, so far announced, covering five of the six kinds of tobacco for which programs were in effect in 1934, provides for increases in plantings of from 5 to 15 per cent. in 1935.

In the future we may see adjustment programs relating to programs for planting acreages greater than the base acreages. But we cannot look confidently towards that while we maintain tariff policies definitely barring the way to a resumption of trade with countries now committed to nationalistic policies and incapable of buying our farm products.

The ideal of balanced harvests with production balanced to effective demand is much nearer realization as a result of adjustment. A contribution to the solution of this old problem may turn to employment of the principle which Secretary Wallace calls the "ever-normal" granary. Commodity loans on corn and cotton have been successfully employed because they have been coupled with pledges of crop control. Perhaps we can employ this principle to an extent where our carry-over of farm products can be in amounts which will provide ample reserves for any emergency but without the price-depressing effects of bulging granaries, sheds and cold-storage plants in other years.

The problem of achieving greater and more general employment of the principles of better land utilization will depend to a considerable extent on farmers. As a nation, we have failed to keep our land policies in harmony with change. We are paying for haphazard settlement and for the thoughtless program of turning over to private exploitation with all possible haste of land, timber, water and other resources which might have better served the public interest by being held publicly.

We opened the way to the farming of lands which were definitely submarginal for agriculture when first visited by a plow, and now we are paying for this mistake in several ways. We are finding that farm families restricted in their economic opportunities because their lands are of low productivity by reason of poor soil, climatic conditions and erosion, cost the public money directly and indirectly. It is not alone the broad social cost arising out of the fact that this restriction of economic opportunity means blighted lives. These lands account for a great many of the 500,000 farm families on relief. These account for the serious problem of tax delinquency in many areas. These account for many of the districts where county and State governments find it necessary to subsidize school and road costs which might otherwise be largely met through local revenues.

The Government is taking steps to acquire some ten million acres of land submarginal for agriculture and to transfer this land to public uses for which it is better suited—forests, grazing areas, public parks, game refuges, wild fowl nesting areas, and recreation centers. Contrary to the theories of many people who are unacquainted with the miseries of attempting to fight nature on fruitless lands, the occupants are not reluctant, but anxious to sell these lands at the low prices the Government can offer. The most difficult problem arising out of this belated effort to meet a problem which might never have arisen if wiser policies had been employed, centers about the resettlement of those whose resources are extremely low.

Because we have a more nearly unlimited capacity to consume industrial products than farm products, we have in the future to look towards industrial expansion which will not only absorb the unemployed of the cities, but many of those who cannot today find on the land employment which will make them self-supporting. Instead of further congesting cities where opportunities for self-reliance are so limited in times of depression, many of these may find in a semi-rural life in the future greater security than in the past. In a pattern of life combining industrial employment with homes on small tracts of land lays an opportunity ahead. This will depend to a large extent on whether industry, when once more it expands, returns to a trend it displayed in years immediately before 1929—of seeking more decentralized locations. Decentralization of certain types of industry is possible today where it was not possible before the coming of fast truck and motor car transportation, of greater availability of electric power and mass-production machinery.

Agricultural adjustment will have an important part in gaining a solution for the problem of achieving higher average standards of living. Adjustment has not set for itself an unfair goal—pre-war purchasing power for farmers. This goal, should it be achieved and held over a period of years, would not impose an unfair burden on other groups. It has been soundly assumed that the farmer has a function in addition to supplying the foods and fibers which must be processed, transported and distributed before being consumed. Other groups have an interest in him as a buyer, as a consumer of their products, and they have an interest not to be overlooked in his ability to obtain for his family a steadily rising average standard of living.

In connection with the broad attack on the problem of achieving higher average standards of living, I would like to call attention to the principle of proportionality. It illustrates our situation today.

We know that in our complex society each of us trades the product of his labor and efforts with others. We live, as the saying goes, by taking in each other's washing. It is therefore necessary for us to be in a position so that each has washing to be sent out and washing to take in.

We have large groups of unemployed and inactivity where we would be more desirably engaged in producing wealth because, someway or somehow, we are not organized so that our labor finds expression in productivity which can be traded around. If we had, in some magic way, just the right proportion of wheat raisers, of dairy producers, of house builders, of well diggers, and the thousands of other occupations at which people can be employed, then everybody would trade their products about in an even and continuous stream, with mutual satisfaction, and no surpluses.

If this principle of proportionality does not work in the automobile carburetor, the automobile fails to produce power. There may be plenty of gas in the tank, plenty of current in the ignition system and plenty of air, but the absence of these at one point in proper proportions prevents combustion and the creation of power.

Again, in the case of corn and hogs we have an instance with which every farmer is familiar. If we have an abundance of corn and not enough hogs together with other creatures to consume the corn, the price of corn is low and hogs are high, or vice versa, if we have too many hogs for the supply of corn, then the price of corn is high and the price of hogs low.

Suppose we had a very primitive community in which certain producers were raising wheat and other producers were making cheese. The wheat producers traded wheat for the cheese and the cheese producers traded cheese for wheat. Neither could eat more cheese or eat more wheat than would be consistent with their appetites. If there were too many wheat producers in proportion to the number of cheese producers, then there would be a surplus of wheat. The trading power of wheat would fall, and, since it would fall, some of the wheat producers would learn how to become cheese producers. A state of balanced production would be at that point where there was a sufficient number of wheat producers to supply all of the needs for wheat and a sufficient number of cheese producers to supply all of the needs for cheese.

Now, it is not a difficult matter to maintain the principle of proportionality in a simple society, in a society adapted to open and perfect competition, where there is opportunity for change and freedom of movement for all. But it is entirely different where, instead of having only cheese and wheat producers, we have thousands of occupations, six million farms, and numerous factories and activities—many with fixed routines, patterns and traditions. We are suffering today because this principle of proportionality is not working and somehow we do not have the right proportion of men and mechanical power raising wheat, building houses, manufacturing bathtubs, drilling wells, and supplying the thousands of things which might be traded about, giving all of us greater satisfaction and a higher standard of living.

Proponents of the Agricultural Adjustment movement are sometimes vigorously criticized on the ground that they are preventing the production of wealth. They answer that they want agriculture to produce all the food and fiber that can be consumed by buyers who have something to trade in return, but that in a world organized such as ours, when production is larger than this, there is no place for it and it is found, in keeping with the principle of proportionality, that excessive production redounds to the detriment of the surplus producers.

We need an opportunity for some of the wheat raisers or the cotton raisers to become producers of houses and the many other things which can contribute to a rising average standard of living.

With an increase in purchasing power largely as a result of the adjustment effort, the farmer is contributing to better working of this principle. The farmer is today a potential consumer of great quantities of products, including many things which he has had to put off buying. Agricultural adjustment, through helping him recover his purchasing power, is helping him to become a better consumer as well as a more rational producer.

MR. TURNER: So far this afternoon we have an important program. The next speaker is supposed to give a discussion on Miss Grace Frysinger's talk, our own Mrs. Harry T. Williams, State Chairman of Home Economics.

MRS. WILLIAMS: Mr. Chairman, Friends and Members of the Maryland Farm Bureau. I don't believe we are going to have much discussion. After listening to those two women, you can imagine just how I feel to try to discuss their talks—they are two of the best known women in our United States, and then you bring up just a farmer's wife to discuss them. I feel just like a certain Leghorn rooster they tell about. A farmer had gone to Florida, and when he came home he brought back an ostrich egg. He put this ostrich egg out in the barnyard. This little Leghorn rooster called all the hens around him, and what was he saying to them? He was saying about this, "I do not expect so much of you, but just look at what can be done in other parts of the country."

Now, I am going to take just one phase of the many phases they touched upon. I am just going to talk for a few moments on the "Joy of Life." We have so much of the stress and strife and trial, and it is absolutely essential that we do our bit to leave this world better for our having been here. My friends, we pass this way but once, we must get this joy of life, if we are going to get it, day by day. How many of us in the stress of time and turmoil on the farm, say "Next year we will take our vacation, next summer, next winter"; when the time comes it is always the next time. We must in these days take for ourselves some of the joys and pleasures of life; we are not going to stay very long, and we do not come back, so we must enjoy each day as it comes. Edgar Guest put it so well:

"I wonder if this Life, can it be
Richer with joys than those we now possess?
If men, who young, shall follow you and me
Shall add one mite to human happiness.

Is Life withholding something from us all,
Something of her joy which other men shall gain
And once realized shall make this earthly ball
A new Elysium, free from care and pain?

Or has Life shown us all it has to give
And has man's governing strewn the world with woe?
Have we so filled with Life the days we live
That we have no time left for us to know.

I think this life itself will never change
What may occur some time, and so I pray
Us, that the minds of men will re-arrange
Their mortal standards of a well-spent day.

They may discover just what has been a thing
Is that false pride for which their nations live
That walk the ways, they will find the time to sing
With happy hearts the joy of being alive."

MR. TURNER: Next on the program is a discussion by Mr. J. W. Jones. He has asked me not to call on him, but I am going to do it anyway, and give him five minutes.

MR. JONES: Mr. Chairman and Men and Lady Members of the Farm Bureau: I am glad of an opportunity to say just one word; it will only be just a word. I am particularly pleased with what Mr. Wilson has told us, it has been very gratifying to me. About fifteen years ago the farmers of the State of Maryland were intelligent enough and interested enough in what they were trying to do to know that they could not get along unless they got together and cooperated, and so they finally started the organization of the Farm Bureau in this State. I believe I have the honor of being the oldest member of the Farm Bureau in Maryland. I am proud that we could stick together and get along together for so many years. We had many difficulties in trying to organize; to get our farmers to cooperate with this plan. Everyone said farmers could not get along together, but all during that time they did, and we have been very successful. We have had a good Farm Bureau for a number of years, and have cooperated to a great extent, not to the extent we should perhaps. I think what has pleased me more than anything else was when the Federal Government came along and realized that the farmers could not do it as separate individuals, and the first thing they said was that you must organize, you must cooperate, if you want any help through the Federal Government, you have got to get it through organization. Therefore, they helped us to organize, and today we are much better organized, possibly not entirely a Farm Bureau proposition, but everything throughout the country has been done in a cooperative way to our advantage. I live in a community where there have been three farmers' organizations, one since 1842, organized before the Civil War, and has continued since. In their meeting one night a gentleman got up and asked to say something, he went on to say how the Government should manage this and so on about Cy. Jones. I said to him, "You know now what was presented. I presented it to you before. I think it is a good thing for the farmers of our county to take advantage of this. I do not believe the Federal Government is going to change its plans for you or Cy. Jones or the County Agent or anybody else." I think the Government's plans have been very helpful to the farmer. I said yesterday that two years ago in my section of the country if you approached anyone on the subject of agriculture they did not want to talk to you, they would turn away, they did not know what to say, they felt discouraged, but now it is very different. The money that has been distributed by the Federal Government has been a great help to the farmers. In our county they are glad to come in and get it, and then to take it across the hall from our office and pay their tax bills. I believe if it had not been for the money distributed at that time among the farmers, many of them would have to dispose of their farms. I believe the plan that has been adopted has been a wonderful help to us as farmers, and I hope that it continues, and I hope we all give it our hearty cooperation and thanks.

MR. TURNER: The next speaker needs no introduction from me. He is the man responsible for the best extension service in the United States, the best lot of County Agents, and the best lot of home demonstrators. There is no use in my even calling his name, but I will, Dr. T. B. Symons.

DR. SYMONS: Miss Mims, Miss Frysinger, Mr. Chairman, Ladies and Gentlemen: Mr. Turner covered a great deal of territory. However, it is a distinct privilege and pleasure in my humble capacity to say on behalf of the representatives of the Extension Service, as well as all representatives of the University of Maryland, to express our appreciation for the very wonderful cooperation that the farmers of Maryland have given during the past year to the wonderful efforts made to rehabilitate the industry. I am pleased to say, Mr. Chairman, on behalf of our Extension Service and the University of Maryland, that Maryland has the best farmers in the world, and I want to say also, Mr. Chairman, that we like to take this opportunity to say a word of appreciation on behalf of our able and distinguished leader of this organization, Mr. Charles T. Cockey, Jr. Mr. Cockey is respected in every field of effort. He has assisted in every part of the work, and it is a distinct pleasure on the part of all of us to work with Mr. Cockey, and our vice-president, and particularly with Mr. Wise, in our efforts this past year to develop and increase the membership in the Farm Bureau. So it is fortunate—even more so than sometimes we can appreciate—that we are working in harmony in Maryland, harmony in the Farm Bureau, harmony in the community. Harmony in the State means progress, satisfaction and helpfulness to every individual.

I was reminded by the story suggested by Miss Frysinger when she said that the janitor was trying to check up on himself, of the Will Rogers' story about something he saw in England. On the train going from London to Edinborough, he noticed a Scotchman get up and run off the train each time it stopped and then come hurrying back. Finally Will said to this man, "My friend, you seem to be very nervous. May I ask why you get off at each place we stop?" The Scotchman said, "Well, I have been trying to learn something about myself. I have just returned from London where I had a physical examination made, and they told me that I have got a very weak heart, and so I have been buying a ticket from station to station on the way back home."

Now, we have been having a very wonderful program, friends, and I hardly think it was fair for Mr. Wise to add this annual talk of mine. I will change it and try to brief it.

(Dr. Symons then gave his talk, assisted by a large exhibit on a platform.)

A LOOK AROUND THE CORNER

By DR. T. B. SYMONS,
Director, Extension Service,
University of Maryland.

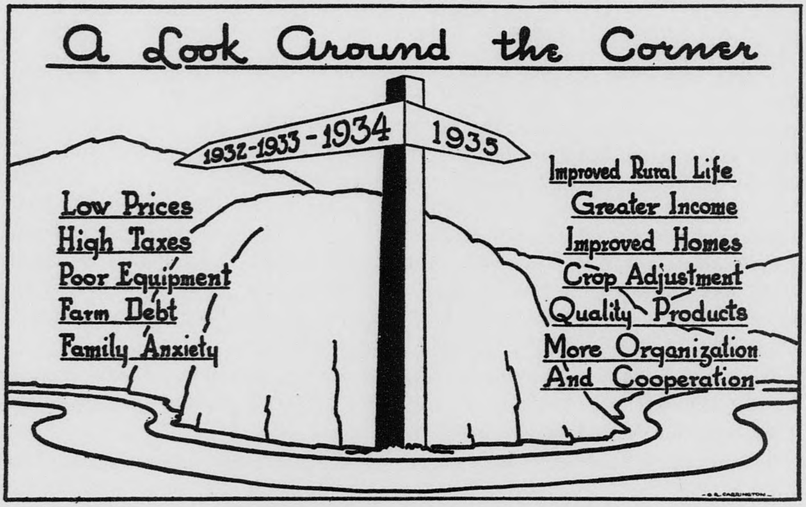
Mr. Chairman and Members of the State Farm Bureau:

We have heard the old saying, "a run for your money." We have also heard the advice to "look before you leap." We have heard many proverbs and quotations picturing Opportunity knocking at the door. Some say that it knocks but once, and some say, many times. The following lines by Jerald Massey are appropriate:

> "Not by appointment do we meet delight
> Or joy! They heed not our expectancy,
> But 'round some corner of the streets of life—
> They of a sudden greet us with a smile."

It is with this philosophy that I approach a short discussion of the path we have trod for the past few years, and take glimpses into what may seem to be ahead in the comparatively near future.

We have seen for the past ten years prior to 1934 a gradual decline in agricultural prosperity. We have seen this organization, the Farm Bureau, fighting during this period against the inequalities under which farmers were operating. We have seen the holiday movement when


A Look Around the Corner
1932-1933-1934
1935
Low Prices
High Taxes
Poor Equipment
Farm Debt
Family Anxiety
Improved Rural Life
Greater Income
Improved Homes
Crop Adjustment
Quality Products
More Organization
And Cooperation
— G. E. CARRINGTON —

farmers lost their sense of appropriate action. We have seen foreclosures on farm properties by wholesale, and we have seen within our midst the shrinkage of lifelong savings, and sometimes even the loss of homes through failures of banks.

There is nothing to be gained by keeping our eyes focused on this picture, which, I assume, all of us would be glad to forget. In my opinion there is a brighter picture for Maryland agriculture "around the corner." In fact, the road during the past year has reflected distinctly the improvements which are just ahead. The better prices already experienced have resulted in a more hopeful and optimistic feeling on the part of farmers and a renewed courage to attack the problems ahead. Those farmers in the State who have cooperated in the adjustment programs have received a total of $1,406,677.23, in addition to the increased prices received for their products. It is estimated that the gross farm income for Maryland has increased from $53,743,000, in 1933, to $61,804,000 in 1934. This is substantial indication that we are now passing around the corner from the conditions that have distressed rural people for the past decade or more.

I am no prophet or son of a prophet, but I believe the next three years will be the most eventful in our time in the constructive measures that will be developed for the betterment of life in the country. Obviously the city also will share in this development. We have made an approach to adjustment of crops to consumer demand. True, it has been an experiment, but if I judge aright, the farmers of this nation will no longer produce blindly with no thought of the consumption demand.

In 1926—nearly nine years ago—I made the following statement in my annual report:

"I believe that in days to come each producing center will be allocated certain acreages, in order to prevent the enormous surpluses of many products that now occur and cause severe losses, not only for the surplus produced, but for the whole industry. It is believed that the general surplus problem in connection with farm products can be handled at least as satisfactorily as the surplus milk problem is being handled in our dairy industry."

You all can measure the progress made in this direction during the past year. A look around the corner to me indicates a planned production and marketing program that will insure fair prices to the producer. This is not easy, it is indeed most difficult in a nation such as ours, but it can be accomplished, and it will be. In the development of such plans I believe we will come to farm allotments in production. Such allotments will cover proportional production of all adaptable crops without the injunction that the farmer may not produce more, but with the assurance that he will receive fair prices for his allotted quantities of crops produced. Any excess raised may be sold locally at the price it will bring, but it will not interfere with the fair return on quota allotment. As a matter of fact, the adjustment payments made now are similar to the tariff that industry has enjoyed for years. It has been common practice for industry to sell excess production abroad much cheaper than the same product could be bought in this country. At times excess production of many products is also sold at home at reduced prices, but the standard price is maintained for regular production. Farm organizations, Extension forces, and all organized or individual leadership in agriculture, never had a greater opportunity than is theirs now to assist in working out this problem within the next two or three years.

In the view around the corner appear a number of important problems, presenting a challenge to our intelligence, our initiative and—our enterprise. These problems are so intriguing that we feel encouraged to attack them, and to see what can be done by mixing economic theories with experience, and basing our experiments upon patience and common sense.

The U. S. Bureau of Agricultural Economics makes a careful analysis of the outlook each year. Looking forward to 1935, it reports that "with some improvement in domestic consumers' purchasing power in prospect, it appears that the level of farm prices will tend to rise during the first half of 1935, despite the prospective decline in the foreign demand for American agricultural products."

The Bureau further states:

"Possibility of further improvement in the last half of the year depends primarily upon further recovery in the durable goods industries, where the decline in employment and production during the depression was most pronounced."

Applying the outlook to Maryland, I believe we can enjoy a reasonable degree of optimism. With the possible exception of the dairy industry, there is no excessive surplus overhanging the market; and with reasonable plantings, and our nearness to markets, our farmers should enjoy fair prices. I cannot discuss the situation regarding our various crops. Perhaps the livestock market will be among those experiencing the greatest improvement in the last half of the year, owing to the tremendous change brought about by the extreme drought in the principal livestock sections.

There are some broader factors lending encouragement to the welfare of the farming industry. We are fast approaching a better credit situation for farmers, and an agency for short and long-time credit that this industry has badly needed for a generation.

We are approaching a land-use program that, in time, will revolutionize our present haphazard means of settlement, and, I trust, prevent many worthy individuals and their families from working in vain to eke out a living on land that should be devoted to other and more suitable purposes. The most important consideration in the classification of lands, so far as their best use is concerned, is the elimination of areas unsuited to settlement.

As Secretary Wallace recently said, "This is a social as well as an economic problem. It involves human beings as well as land."

Along with better land use we will see better forests and the conservation of wood, and this cannot be ignored in successful agriculture. We will see a conservation policy of wild game on these untillable lands, and this will be not only helpful but a real joy to our people. We will likewise see the conservation of our water resources and witness their greater use for the benefit of the people concerned.

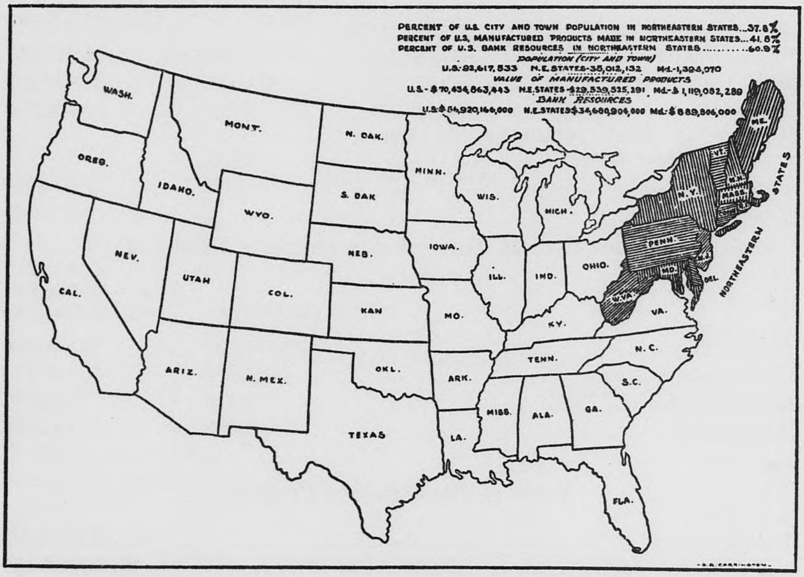
We see wholesome recreation looming up in the future as a distinct feature of our lives. This has heretofore been in the background for farmers and their families. To many the annual farmers' picnic has, in a feeble way, served this purpose. But this has become inadequate and has failed to satisfy. We now see planned recreational centers in every community, and especially planned recreational opportunities for the youth as well as the adults.

We see better housing for the rural people. We see modern improvements installed. We see more use of electricity on the farm and in the home, and its availability to a large proportion of farm homes. With only one farm in every eight using electrical power of any kind we can realize what this one feature will some day mean to agriculture.

A leading industrialist, Alfred P. Sloan, Jr., recently wrote, "What capital and labor both need at this pass is the birth of a new industry which, like the automobile industry of twenty-five years ago, will grow swiftly into large production, with direct beneficial effect on wages, investment values, and living conditions. Necessarily this must be a broadly based industry, the product of which will appeal to the masses, and presumably it must be one which can adapt itself to the mass-production methods which have reached their highest efficiency in the manfacture of automobiles. One new industry that seems to meet these requirements is the manufacture and assembly of machine-made homes." He further states, "The farmer, whose efficiency in wheat production is as 60 to 1 compared to primitive husbandry, lives in a shelter erected by almost primitive hand methods. These houses of the present are not well adapted to the installation of modern mechanical devices and their upkeep is heavy beyond all need."

He believes, again to quote his own words, " . . . to an extent the housing development of the future perhaps will be rural. Farm housing is lacking from the standpoint of many modern conveniences. A great farm market awaits, if the successful inauguration of this project coincides with the return of farm buying power."

We see a concentration of study and effort of all agencies directed toward improving the marketing and distribution of farm products. This perhaps presents the greatest challenge. Not only must we in some way lessen the competition of farmers in raising crops, but we must avoid the present inevitable conflict of farm products from various sections on the same market, causing untold losses to the producers, and not in any degree assisting distributors or consumers. We see that marketing agreements have greatly lessened this evil in many sections of the country. We must apply them to our region.


PERCENT OF U.S. CITY AND TOWN POPULATION IN NORTHEASTERN STATES...37.8%
PERCENT OF U.S. MANUFACTURED PRODUCTS MADE IN NORTHEASTERN STATES...41.8%
PERCENT OF U.S. BANK RESOURCES IN NORTHEASTERN STATES..........60.9%
POPULATION (CITY AND TOWN)
U.S.-82,617,533 N.E. STATES-35,012,132 Md.-1,324,070
VALUE OF MANUFACTURED PRODUCTS
U.S.-$70,434,863,443 N.E. STATES-$29,539,525,191 Md.-$1,119,082,289
BANK RESOURCES
U.S.-$54,920,166,000 N.E. STATES $34,680,904,000 Md.-$889,806,000
WASH.
OREG.
CAL.
IDAHO.
NEV.
MONT.
WYO.
UTAH
ARIZ.
COL.
N. MEX.
N. DAK.
S. DAK
NEB.
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TEXAS
MINN.
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MO.
ARK.
LA.
WIS.
ILL.
MICH.
IND.
OHIO.
KY.
TENN.
MISS.
ALA.
GA.
FLA.
S.C.
N.C.
VA.
W.VA.
MD.
DEL.
PENN.
N.Y.
VT.
N.H.
MASS.
ME.
NORTHEASTERN STATES

PERCENTAGE OF POPULATION, MANUFACTURED PRODUCTS AND BANK RESOURCES IN NORTHEASTERN STATES.

Northeastern Conference

This brings me to the vision around the corner that emphasizes the greater need of regional consciousness among our people in this area on the Atlantic seaboard. Recently a conference was called of representative farm leaders in the twelve New England States, for the purpose of developing a unified program in dairying, and in poultry, fruits and vegetable production. The President and Secretary of the State Farm Bureau and other representatives in this State attended. A very representative group of men from all the States devoted three days to a discussion of the problems surrounding the above named industries in this area.

Great Possibilities of Northeastern States

We were all impressed, and I trust that our farmers in Maryland will be more and more impressed, with the tremendous opportunity we have for coordinating our efforts to take greater advantage of the possibilities of this region from an agricultural standpoint. Let me present the following figures on population, and the industrial and general resources of this unusual section of the United States:

Population

	Farm	City and Town
United States	30,157,513	92,617,533
Northeastern States	3,014,070	35,012,132
Per cent	10%	37.8%
Percent of total population in the Northeastern States	31%	
Maryland	237,456	1,394,070

Persons Over 10 Years of Age Gainfully Employed

	Agriculture	Other Industries and Professions
United States	10,471,998	48,829,920
Northeastern States	1,014,576	15,730,148
Percent	9.7%	32.1%
Maryland	84,082	672,879

Value of Manufactured Products

United States	$70,434,863,443
Northeastern States	29,539,525,291
Percent	41.8%
Maryland	1,119,082,289

Total Resources All Banks Reporting

United States	$56,920,166,000
Northeastern States	34,680,904,000
Percent in Northeastern States	60.9%
Maryland	889,806,000

Estimated Value of All Tangible Property—1932

United States	$320,804,000,000
Northeastern States	111,373,000,000
Percent in Northeastern States	34.7%
Maryland	3,991,000,000

Value of All Crops

United States	$8,077,812,320
Northeastern States	752,170,632
Percent	9.3%
Maryland	65,810,431

Value of Livestock Products

	Total	Dairy	Poultry and Eggs
United States	$3,307,324,942	$1,818,481,960	$1,446,994,181
Northeastern States	685,083,668	428,889,067	261,084,557
Percent	20.7%	23.3%	18%
Maryland	36,468,459	19,352,273	18,304,751

Value of Potatoes

United States	$136,922,000
Northeastern States	43,858,000
Percent in Northeastern States	32%
Maryland	1,620,000

Fruits and Vegetables

	Total Farm Value—1933
United States	$337,013,000
Northeastern States	76,871,000
Percent in Northeastern States	22.8%
Maryland	8,526,000

These figures present a remarkable array of facts concerning the density of population in this area. It is noted that 37.8 per cent. of the consumers in this country are living within these States; that 41.8 per cent. of all manufactured products are produced in this area; and that 60.9 per cent. of the bank resources of the nation are concentrated within these twelve States. No other section in this country, or probably in the world, offers the buying power for agricultural products that is presented to the farmers of this section. These facts in themselves offer a great challenge to our people.

A look around the corner leads me to urge that we cooperate enthusiastically with the farmers in these other States toward a uniform program of progress.

Time will not permit my citing the results of the Conference, or commenting on the resolutions adopted. It is, however, a forward movement, and already a strong permanent Dairy Committee has been formed to attack the problems in the dairy field. In a short time the same will be true in poultry, fruits and vegetables.

In our own State, far-reaching proposals are being considered with a view to solving some of the problems affecting the dairy industry. It has been proposed that legislation be enacted providing for a milk control board. I am not unsympathetic to such a proposal. It is my suggestion, however, that the matter be approached in such a manner as to reduce possibility of error to a minimum. Experiences of other states, with similar boards, might well be given careful study in order to avoid some of the troubles they have encountered.

It should be remembered that a large number of our milk producers ship their milk to markets outside the State. It is obvious that any legislation on this subject should carry with it concurrent jurisdiction and co-operation with the Federal Government. It is clear that a measure of this kind implies serious responsibilities on the part of the State, as well as upon the industry. It is therefore wise to attempt to accomplish by such legislation only those things that can be done thoroughly and well. It must be admitted that general chaos results from attempts to control without adequate enforcement, adequate authority, and sufficient funds for effective operation.

Such a board should be recognized as an impartial referee by the industry, and we must be careful that control legislation for this and other commodities does not retard or minimize the achievements in co-operative marketing among producers.

Education and Research

I cannot conclude these remarks without directing your attention to growing demands for education and research. A look around the corner emphasizes the continuing need of adult education and the development of research in agriculture and science. The acute tax situation has had a tendency to curtail funds devoted to these purposes. The forward looking State, county, community and individual cannot afford to neglect providing for these essential helpmates to progress.

Looking forward, either for a year or for a decade, who can foresee the advance of science and education, and what it will mean to agriculture? The days of progress in low cost production, higher yields and better quality, and general efficiency in production and marketing through research and extension, are not at an end. As one example of the many, many possibilities in this field, I will mention only the promising new winter barley which has just been developed by the plant breeders of the Maryland Experiment Station. Professor Metzger, assistant director of the Station, estimates that at least one-third of the wheat acreage of the State will be replaced by this new barley when sufficient seed is available. It is hoped to distribute some seed in 1936. You can estimate for yourselves what it will mean to you to have a variety of barley which yields as much, if not more, than the varieties you are growing, or would be growing if you could escape the annoying barbs. The new variety is free from barbs, and it is believed that it will save the farmers of the State millions of dollars on their feed bills.

We are turning the corner to proceed down the road to a planned economy of abundance instead of competition in the economy of scarcity.

Finally, I want to repeat that, to me, 1935 presents a better outlook for agriculture than perhaps we have seen in the past decade. I believe it is a good time for a man to continue farming, and that there has been no better time for a young man to begin.

I trust the industry will recognize its possibilities. I hope this organization and all farm organizations will be able to enlist the support of a great majority of farmers and farm women. Perhaps a look round the corner shows that the greatest present need among farmers is organization. The fundamental necessity is for them to become organization-minded.

We have taken great strides along the path of co-operation within the last year. In the agriculture of the present day organized effort is essential. The only way there can be a strong and effective organization is for each individual to play his full part, both in making the program and in carrying it out. From the standpoint of your own interests, and also from the standpoint of the development and progress of the great agricultural industry in this State, I urge that you start the new year with a resolve to take a more active part in constructive measures in behalf of the farming interests—to be willing to listen, at least, to those propositions which seem sensible and constructive.

In closing, friends, I would again express the spirit of optimism, which I believe we have good ground for feeling. In recent years farm folks have experienced many difficulties in many cases amounting to real hardships. I do not know the name of the writer of the following lines, but I believe they express the forward-looking spirit which we well may have in entering the coming year:

"Though the cloud may be dark, there is sunshine beyond it,
Though the night may be long, yet the morning is near;
Though the vale may be deep, there is music around it,
And hope 'mid our sorrow, bright hope is still near."

May you all enjoy the "bright hope," and may 1935 be for you and yours a successful and happy year.

MR. TURNER: Thank you, Dr. Symons, you certainly have given us an inspirational speech.

I have been asked to make the following announcement, that the annual banquet is to be held in this room tonight and if you have not already bought your tickets, you may still get them on the mezzanine floor.

I believe I was down to make some remarks but Dr. Symons has covered everything and the hotel wants this room cleared, so we will adjourn now.

THURSDAY EVENING

The annual banquet convened at 6.30 P. M. in the ballroom of the Lord Baltimore Hotel and promptly at 8 P. M. President Cockey introduced Dr. R. A. Pearson, the toastmaster for the evening. Over five hundred Farm Bureau men and women heard the very interesting program which started with the introduction of the many distinguished guests present. The out-of-State guests included Mary Mims of Louisiana, J. E. Porter, president of Tennessee Farm Bureau; G. E. Holsinger, president of the Virginia Farm Bureau; and W. R. Ogg, acting secretary of the American Farm Bureau Federation. Murray D. Lincoln, executive secretary of Ohio Farm Bureau, gave a short talk on cooperation and a word of greetings from Ohio, and Robert Irvin, secretary to Governor Nice, spoke for the Governor. President Edward A. O'Neal delivered one of the best talks on farm organization heard in Maryland. In it be brought a word of progress and optimism for agriculture and complimented the Maryland Farm Bureau by stating "There is none better and some not as good as your organization." Hon. T. Alan Goldsborough discussed the monetary problem in a most effective address. He cited the fact that we have learned to produce but have not solved the problem of distribution and until this question is settled it must remain a reflection on the statesmanship of the nation's leaders.

Following this short, snappy speaking program Toastmaster Pearson introduced William H. (Bill) Evans as master of ceremonies for the entertainment features which were very well received. Dancing followed the formal program and everyone seemed to feel that the evening had been a grand success.

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FRIDAY MORNING, JANUARY 11

President Charles T. Cockey, Jr., presiding.

Mr. Cockey: We have some bad news to give you this morning. I understand we are about to lose our good County Agent from Caroline. It seems the people in New York from Roxy's are bidding against us for him. It is good for Bill, but bad for us. Now, I hope you are all feeling fine this morning.

Mr. Nuttle: Did you find your overcoat?

Mr. Cockey: That coat was brought back to me, but I am not going to tell you who brought it. I know I feel a great deal better this morning than some of you do, but I think on the whole the behavior has been pretty good, the last man on my floor came in at four o'clock this morning, I won't tell his name.

Question: I would like to ask the gentleman what floor he is talking about?

Mr. Cockey: The same floor you are on.

Mr. Cockey: Now, the first thing on the program this morning is the roll call of the voting delegates.

Roll called.

Mr. Cockey: Next on the program is the report of the Resolutions Committee. Is the chairman of the Resolutions Committee ready to report?

Mr. Nuttle: I first want to thank the other members of the Resolutions Committee for their cooperation and help. I have never been on a Resolutions Committee where I have had more cooperation than I have had in this particular committee. We have had a good attendance at the meetings and a great deal of interest shown by the members. We have tried to make the resolutions short and not use any more words than are necessary. I will read the first resolution.

Mr. Cockey: How do you want us to act on these resolutions, as a whole, or each one as they go?

It was moved, seconded and carried that they be taken each one as they are read.

Mr. Nuttle thereupon read the first resolution, which was seconded by Mr. Shoemaker and carried.

The second resolution was seconded by Mr. Little and carried. Mr. Boley seconded the third which was carried. Mr. Linton of Charles County seconded the fourth which was carried.

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Mr. J. W. Lord seconded the fifth resolution, and the following discussion took place.

MR. SHOEMAKER: Will the Resolutions Committee say where that light should be worn?

MEMBER: The laws of Maryland say that a man should walk facing the traffic, and in this case he would have to wear it in front of him.

MR. LORD: Did the resolution say "wear" it or "carry" it?

MR. NUTTLE: I think Delaware has such a law. There was quite a feeling for it. We thought the man driving the automobile should have some protection as well as the pedestrian.

MR. EVANS: Is there such a light on the market now? We have a lot of poor folks walking on the roads; they might not be able to get such a light.

MR. JONES: I think that is one of the best things we have brought out. I know of several occasions where that would have helped me. I most heartily approve of it.

MEMBER: I want to say that I am afraid it would be impossible to carry a light at all times; in certain cases it would relieve the responsibility of careless motorists. It is only the incidental man that would have to go across traffic, very occasionally. I don't think we should have a law to relieve the responsibility of careless drivers. I think it would be better to say that a safety zone should be set aside for the pedestrian and if he goes off of that he should have a light.

MR. TURNER: This is to protect the poor people who are being killed all the time. I do not think it relieves the motorist of any responsibility. All of us know of accidents of this kind where a lot of people are killed. It is meant as a protection to both pedestrians and motorists.

MEMBER: I think it is a protection to both.

MR. SMITH: I happened to serve on a jury in Frederick County several years ago where something happened, where the mayor of one of our smaller towns had an accident, he was operating his car with care and at the same time a man ran into him on the highway, did not have any light. The man who was killed had been supported entirely by his wife before the accident happened but after the accident happened he was worth $10,000. I sat on that jury, and there were men on that jury who wanted to give that woman $10,000 for the death of that man.

In regard to the kind of light to be carried, I believe that if the Legislature passed this law, that in no time all the ten-cent stores would have such a light on sale. Certainly we want to protect both the pedestrian and the motorist.

The resolution was thereupon put to a vote and carried.

Mr. Stephens of Frederick County seconded the sixth which was carried.

Mr. J. W. Jones seconded the seventh which was carried.

Mr. Rick of Caroline County seconded the eighth which was carried.

Mr. Frank Lupo seconded the ninth which was carried.

The following discussion followed the reading of the tenth resolution:

MRS. HARRIS: Does that take in eggs imported from China?

MR. NUTTLE: I will ask Mr. Rick to answer that.

MR. RICK: That would cover any class of egg; it does not specify the destination or origin of the egg.

MRS. HARRIS: Suppose they did not come in as eggs. Suppose they came in bulk.

MR. RICK: That would take care of everything in the shape of eggs. Mr. Rick ask that the resolution be read over again.

MRS. HARRIS: If I understand it right, if anyone wants to sell edible eggs they would have to take out a license?

MR. NUTTLE: A license for selling inedible eggs. The first part says if you say they are fresh they have got to be fresh.

Resolution seconded and carried.

Mr. Boley seconded the eleventh resolution which was carried.

Mr. T. A. Mann of Baltimore County seconded the twelfth which was carried.

Mr. W. W. Hopkins seconded the thirteenth which was carried.

Mr. Smith seconded the fourteenth which was carried.

Mr. Little seconded the fifteenth resolution which was carried.

Mr. Weagley of Washington County seconded the sixteenth resolution which was carried.

Mr. Northam of Worcester County seconded the seventeenth, and the following discussion took place:

MR. A. K. AUSTIN of Dorchester County: Why not include tomatoes with potatoes? We thought it would be well to have them named as one of the basic commodities. I think it should be considered. I would not like to suggest it though.

MR. NUTTLE: Perhaps you would like to put that in the form of a motion.

MR. AUSTIN: I will put it in the form of a motion. I move that tomatoes be included with Irish potatoes in the resolution.

Mr. E. Shoemaker seconded the motion.

MR. COCKEY: Was that brought up in the committee, Mr. Nuttle? It was never suggested.

The resolution was re-read.

MR. NUTTLE: It does seem to me that that should be a separate resolution for tomatoes. If the gentlemen wish to retire and write one for tomatoes we will present it. It seems that potatoes were over financed last year, and that is the reason the growers are in such bad condition. There was not so much financing of tomatoes as potatoes, I think.

MR. NUTTLE: Yes, it used to be that the Eastern Shore of Maryland produced most of the tomatoes but now there are thirty States that do it. Even out in Utah they have a large crop.

MR. ENSOR: It just occurred to me that there is considerable difference between tomatoes and potatoes. You could have a processing tax on tomatoes. Practically all of the tomatoes are sold in cans and, therefore, you could have a processing tax for them. But it is impossible to get a processing tax for potatoes. It seems to me that that ought to come in a separate resolution for that reason. I think it would complicate the situation to put that in this resolution.

MR. AUSTIN: I withdraw my amendment. It was only made on the spur of the moment. I agree with Mr. Ensor. If anything is done with tomatoes it should be done in a separate resolution.

The resolution was carried.

Mr. Lupo seconded the eighteenth resolution which was passed.

Mr. Smith seconded Resolution No. 18½ which was passed.

Mr. Nuttle then called upon Mr. Massie, Chairman of the Tax Committee for a report.

MR. MASSIE: This is a 20-page report and copies are being handed around to you.

MR. TURNER: I move the adoption as a whole, we can consider it as a whole.

Mr. Smith seconded the motion with the amendment that the delegates give a vote of thanks to the committee.

The following discussion took place as to "Section 9. Land and Building Assessment," on page 20 of the report.

MEMBER: I have in mind one estate in Kent County, it comprises eleven farms, and if it were to be sold on the market for actual farm purposes, it would not bring more than 30 per cent. of the amount of money invested in it. We have a great many such developments in Kent County. at least four. Are they to be included in this?

MR. MASSIE: Will Mr. Harry please answer that?

MR. HARRY: The view of the committee was that in many cases we do not want to get away from the fact of assessing the land separate from the buildings. In many cases the buildings are worth more than the farm. We think it better to take it as a unit. Of course, where it is used as a development, then it would be assessed in that way—as a commercial matter rather than as a farm. We think we should consider the farm as a unit.

MRS. HARRIS: There are millionaires coming into Maryland because the Eastern Shore is looked upon as the garden spot of the world. They are building mansions on the places. One man's hog house is a lot better than the house in which we live. And yet our farms are assessed the same, it seems to me far higher than they are on these wonderful homes—some of them $70,000 and more. I do not think it is fair. There is a place not far from where I live with a $70,000 house on it. There is an entirely different set of people coming into Maryland now. I was told in New York that Wall Street would soon own the Eastern Shore of Maryland. We have another instance, a man wanted to have a game preserve on his place, and he built a wall costing $8,000 around it. That man is not assessed for that. He has money to spend for other purposes, and there should be some way in which he should be assessed for that.

MR. ENSOR: Did he put that there himself, or did the State pay for it?

MRS. HARRIS: He put it there himself.

MR. TURNER: Mr. Harry, a good many of us are thinking of Raskob. Could he have his taxes assessed under this?

MR. HARRY: Absolutely not. We want to consider the farm as a unit. We are not considering commercial property.

MRS. HARRIS: But they call themselves farmers.

MR. HARRY: That is up to the tax assessor.

MR. MASSIE: I might state that we had quite a discussion about that, as to how it would help the farmer down on the Eastern Shore and we thought it would

MR. HARRY: Mr. Chairman, the assessor takes into consideration the resale price of that property, if there is a $70,000 house on it, it ought to be taxed for that, but the buildings on the farms are taxed based upon their use for agricultural purposes. We want to lower the tax on farms where the units would not stand it.

MR. JONES: I want to first say that I heartily approve of the work the Tax Committee has done, it is very excellent work and I certainly approve of it. Mrs. Harris said they consider the Eastern Shore of Maryland the garden spot of the world. I want to say that over in Montgomery County we have come to be known as the Garden of Eden, and people come out there from the District of Columbia, people from the West with lots of money come out there and they are buying farms and building estates on those farms costing anywhere from sixty to seventy-five or eighty-five thousand dollars. Those places have on them farm buildings where the manager lives, but these other buildings for the residence are different. I am wondering if the wording of this recommendation covers the value of that residence taking into consideration its value to the farm for agricultural purposes—if the recommendation of this report is that those estates shall be taxed as residence property and the other building taxed for farm purposes.

MR. MASSIE: I think that is what it will work out to be.

MR. JONES: I am afraid it does not say so.

Mr. Massie reads the section over again.

MR. JONES: I cannot say that I approve of that proposition. I know of a case where a man has bought one of these places, and the first thing he had to do was to tear down one-third of that house, it was entirely too big. He had to use the parlor and reception halls for granaries. People live in establishments of that kind that are not adaptable for farm purposes and they certainly ought not to be exempt from taxation for them.

MR. WILSON of Washington County: It seems to me that the tax assessor can take care of a proposition of that kind. Take the State as a whole, under present conditions a man is assessed for improving his house. The big idea is to value the farm as a unit. These developments, it seems to me are not used in the farm unit, and as a result the tax assessor can take care of that.

MR. MCDOWELL: We have a proposition in our county, when you talk about assessing the farms as a unit, Mr. DuPont of Wilmington has been buying farms and letting the buildings run down, they are of no value to him.

MR. HARRY: This is not anything new. This is one of the things in our report each year which is to be adopted each year.

MR. SUTTON: One of the places I have reference to produces milk, markets milk the same as we do, and we are in direct competition with these millionaires.

MRS. HARRIS: One man in my neighborhood is growing hogs and selling them for eight cents. I asked them, "Can you produce hogs for eight cents? It costs us twelve cents." They do not care. They are putting their hogs on the market with ours. I tell you it is a serious proposition. They are buying up the farms and growing things and entering into competition with us. Why should they care how much it costs them to produce milk, when they have these large incomes? Here I am fighting with my back to the wall to try to hold the farms that have been in my family for generations from these millionaires who want them, and it looks like they are going to get them simply because they have money and I have a water front.

MR. McDOWELL: I do not find any fault in people coming in and buying our farms and lands. I think it is a very good idea to take over some of these farms that we cannot use, I think it is a good idea to encourage it.

MR. SUTTON: I do not agree. My place has been in my family since 1789; we have a heritage that these millionaires are coming in and trying to take away from us.

MRS. HARRIS: They are not paying for them. They are only paying the mortgage. I do not think it ought to be allowed. If we say their mansions are to be assessed only for farm purposes, their value for farm purposes, they would not be worth any more than a building costing $4,000 on that farm, and I just do not want to see those fellows get off without paying. If the tax report provides for that, I am with it 100 per cent. I want to support the Tax Committee of the Grange and the Farm Bureau.

MR. DAVIS: If we let that come in that way, the tax assessor will take care of it.

MR. CHILCOATE: If you put too small an amount they will send it back to you. I have been on that job. I know.

MR. MASSIE: I know of one case where a man bought a farm for $8,000. He had a herd producing 1,000 pounds of milk a day. It took him years to work up. He finally built a barn that cost him $9,000, not a fancy barn either. That was adding $9,000 to the $8,000 he paid for the farm. Now, it would be wrong to tax him on $9,000 for that cow barn in addition to his $8,000. It would put him out of business. I will grant it may not work out right with these rich people, but this man's taxes went up out of all proportion. He felt awfully sore about it. There are people who want to put improvements on their places but they will not do it under the present condition of the tax on farms.

MR. HEISER: I think we should give a vote of thanks to our Tax Committee for getting out this report. It is a most thorough investigation of the tax situation. They have taken an extremely broad-minded view of the whole situation. I second the report.

Report accepted.

Mr. Nuttle read the nineteenth resolution and moved its adoption. Mr. Smith seconded it and it was carried.

MR. NUTTLE: I now move the adoption of the report as a whole.

Mr. Smith seconded the motion and it was carried.

RESOLUTIONS ADOPTED BY THE MARYLAND FARM BUREAU FEDERATION, JANUARY 11, 1935

RESOLUTION No. 1.

Resolved, That we reaffirm our belief in and our support of the Agricultural Adjustment Act. The day of trial and error is passed and this is the day of the planned life when Agriculture along with industry and labor must plan ahead if we are to have anything like a fair deal. We pledge our support to whatever legislation is necessary to make the Agricultural Adjustment Act permanent, and thus insure continued effort to maintain parity between the prices of what the farmer has to sell and what he has to buy.

We pledge anew our loyalty to President O'Neal and the National Farm Bureau. The increase in membership in 1934, the leadership and inspiration evidenced at Nashville and the unselfish devotion to high ideals of our farm leaders in Washington all lift our hopes for a brighter future.

RESOLUTION No. 2.

WHEREAS, the last legislature curtailed appropriations to the University of Maryland Experiment Station and Extension Service by at least 40 per cent., and

WHEREAS, many additional and necessary duties have been placed upon the Experiment Station and especially upon the Extension Service by new legislation; therefore

We Recommend to Governor Nice and the State Legislature that in considering appropriations for the University of Maryland Experiment Station and the Extension Service they take care lest they lessen the effectiveness of these valuable agencies, at this time when the farmers need help so much more than in normal times.

RESOLUTION No. 3.—Land Use.

The Maryland Farm Bureau is sympathetic to the development of an intelligent and systematic land use policy. We recognize that there are several sections in the State which contain sub-marginal land that could be better devoted to reforestation and conservation than in any phase of agricultural production. Our organization wishes to cooperate with the State and Federal Governments in their present and future plans for proper land use.

RESOLUTION No. 4.

WHEREAS, the Great Falls of the Potomac River are a possible source of electric power, and

WHEREAS, the National Administration is favorable to the development of water power in the United States; therefore be it

Resolved, That the Maryland Farm Bureau suggest to the National Administration at Washington the advisability of the construction of dams on the Potomac River for the generation of electric power for the surrounding territory of Maryland, Virginia, and the District of Columbia.

RESOLUTION No. 5.

WHEREAS, many pedestrians are being injured and killed on the highways by being struck by automobiles whose drivers are blinded by the lights of approaching automobiles; therefore be it

Resolved, That a statute be enacted requiring pedestrians to carry a light after dark.

We also urge upon our State officers a more strict enforcement of our motor vehicle laws, especially where accidents are caused by the use of intoxicants.

RESOLUTION No. 6.

WHEREAS, the control of disease of farm animals and particularly that of dairy cattle is so fundamental to the welfare and health of the citizens of Maryland, and

WHEREAS, the Federal and State governments have already expended large sums of money for the eradication of diseases such as bovine tuberculosis, Bangs disease, hog cholera, insyphilistitus (sleeping sickness) in horses and pullorum disease in poultry, and

WHEREAS, we believe that the continuation of disease eradication is paramount to the livestock industry; therefore, be it

Resolved, That sufficient funds be provided in the budget to continue this important work in order to protect the health of Maryland citizens and prevent a great financial loss to the farmers of Maryland.

RESOLUTION No. 7.

We Recommend to our Legislators the enactment of proper legislation covering the theft of fruits, vegetables and grain, while in the fields or on the plants or trees before being harvested.

RESOLUTION No. 8.

WHEREAS, the telephone subscribers of the District of Columbia have been granted a 10 per cent. reduction in telephone rates, therefore, we feel the subscribers of Maryland are entitled to some reduction, and we urge that the Public Service Commission continue the fight for lower rates.

RESOLUTION No. 9.

We Recommend an investigation by our Gas and Oil Committee, assisted by the State Secretary, of recent developments in cooperative oil and gas distribution in Pennsylvania and Ohio. We ask our directors and county units to consider the possibility of such organizations in Maryland for we feel that only through such organizations can we secure more favorable prices and be permanently protected against inequalities in the oil code.

RESOLUTION No. 10.

We Recommend to His Excellency, the Governor, and to the State Legislature the enactment of a fresh egg law which will insure that the eggs a retailer sells or offers for sale shall indeed be fresh, if he represents them as fresh. No egg shall be deemed to be fresh that has been incubated or that does not meet the following standards of quality for fresh eggs: air cells not over one-quarter inch deep, localized and regular; white, firm and clear; shell, sound and clean; yolk allowed to be visible, free from any defect or blemish and no visible germ development.

We also endorse a law that will prohibit the use of inedible eggs, as defined in the Federal Pure Food and Drug Act, as human food or in the preparation of human food; and providing for the licensing of any person, firm or corporation engaged in the business, whether principally or incidentally, of breaking-out eggs or in their sale; and to require that eggs unfit for human food shall be labeled as such; and ask for funds for the Board of Health to enforce said law.

RESOLUTION No. 11.

At the present time there are no State laws which would enable Maryland farmers to obtain Federal loans upon grain stored in their own warehouses, should they desire to do so. We request the enactment of such laws.

RESOLUTION No. 12.

Our canning crops contribute much to the welfare of the farmer. We believe the prices of cans, set by what is practically a monopoly, are too high and hereby direct our secretary to transmit our protest against such prices to the proper authorities in Washington and request a thorough investigation of can prices and profits.

RESOLUTION No. 13.

The Chesapeake Bay ferries are a vital link in our system of State Roads. We recommend to His Excellency, Governor Harry W. Nice, and the State Legislature that in lieu of the present subsidy they consider the advisability of State-owned ferries.

RESOLUTION No. 14.

We do not approve any further limitation by law or code of the work week or shortening of the work day or lessening of permitted output of an industrial enterprise, beyond those now in operation. We unalterably oppose these limitations being applied to agriculture or to the processing of farm products.

RESOLUTION No. 15.

We Recommend that a State Legislative Committee be appointed to work with the President and Secretary in behalf of the State legislation we want. We also advocate the appointment of legislative committees in each Farm Bureau County.

RESOLUTION No. 16.

Resolved, That the Maryland Farm Bureau favors the passage by the present Legislature of a law giving the State Board of Agriculture power to promulgate grades and standards for fruits and vegetables.

RESOLUTION No. 17.

Since the Irish potato crop is one of the most valuable cash crops grown in the United States, and no national program has yet been developed by the industry to make potato production profitable, we recommend that the acreage for potatoes be controlled either by marketing agreements, or by making potatoes a basic commodity; that the Secretary of Agriculture hold a rehearing on the National Fruit and Vegetable Distributive Code so that it can be amended to include a section whereby those furnishing production credit to growers in excess of $50.00 to any grower, must furnish the Secretary a report showing contract of such financing, the name, address of person financed, product, acreage and its location, estimated volume of produce expected from financed acreage and approximate harvesting dates. Such reports and contracts to be subject to the disapproval of the Secretary of Agriculture and are to be furnished two weeks in advance of date or dates during which the crop is expected to be financed.

RESOLUTION No. 18.

We wish to pay tribute to the value of the Federal financing and refinancing of the farmer. Many foreclosures and bankruptcies have been headed off; many families have been kept together on the farm and given a chance to work out their economic salvation.

We approve the merging of all Federal credit agencies concerned with agriculture under one central authority. We recommend that every possible means be employed to lower the general average of interest rates charged farmers. We believe that the cost of distributing credit can be lowered—thereby reducing the spread between wholesale rates now available and the total cost to those securing the loans.

RESOLUTION No. 18½.

WHEREAS, the Board of Directors of the various counties have not been elected according to their county and State constitutions in various instances, we recommend that at the time of their respective annual meetings in the districts which have not elected a director, that said director or directors shall be elected from the floor at said meetings.

RESOLUTION No. 19.

We, the Maryland Farm Bureau Federation, in convention assembled, desire to express our appreciation of the hearty welcome of Mayor Jackson, conveyed by his secretary, Mr. Hough, and of greetings from the Baltimore Association of Commerce, brought by Mr. Pouder.

We appreciate the recognition of our Governor in requesting, through his secretary, Mr. Irving, our support.

We consider the presence of President O'Neal in our convention a great honor and his statement that there are none better and some worse than our State Federation gives us encouragement.

For the enlightening messages from Congressman T. Alan Goldsborough and Assistant Secretary M. L. Wilson we express our gratitude.

To our legislative representative, Mr. Chester Gray, and to Dr. T. B. Symons, for their optimistic outlook, we are indeed grateful.

To other speakers and entertainers who helped to make our convention a success we extend our thanks.

We wish to thank the women who so delightfully varied our program by their participation therein.

We are grateful to the management of the Lord Baltimore Hotel for their fine cooperation.

To our worthy President, Charles T. Cockey, Jr.; to our efficient Secretary, C. E. Wise, Jr., and his assistants; and to those who helped to make this, the nineteenth annual convention a success, we express our heartfelt thanks.

We also thank the press of Baltimore City and the counties for the favorable and generous publicity they have given us.

RESOLUTIONS COMMITTEE—1935,

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REPORT OF THE JOINT TAX COMMITTEE OF THE MARYLAND STATE GRANGE AND THE MARYLAND FARM BUREAU FEDERATION

Despite the fact that considerable progress has been made regarding the reduction of the property tax burden on farmers, it is thought by this committee that there are yet many vital questions pertaining to government and taxation that need careful introspection and constant study on the part of farm organizations.

With this in mind, your committee would like to present the following facts, discussions and conclusions:

Economy

Most of the economy brought about since 1933 in governmental expenditures in Maryland has been largely in two directions: the reduction of salaries of public officials and the elimination of specific offices or services.

The total amount levied by counties for 1934-35 is approximately $5,500,000 less than that levied in 1931-32. This represents an average reduction of 35 per cent, the range among the counties being from 22 to 54 per cent.

This committee is of the opinion that other economies in governmental expenditures are entirely possible and feasible without the impairment of government. There are many features of our governmental set-up, both local and State, which have in them conditions possible of considerable efficiency and economy. For instance, there are six counties which have more than three county commissioners. Several of our largest counties, in terms of taxable basis, have only three county commissioners; therefore, it does not seem plausible that smaller counties would need more than three.

There is a wide variation among the counties in the comparative compensation of and time devoted to county business by the county commissioners. A study of these comparative compensations and time devoted to county duties suggests that in many counties these costs are quite disproportionate and may be substantially reduced.

Table 1. Comparison of County Tax Levies for Fiscal Year 1931-32 With Those for 1934-35.

County	Levy for Fiscal Year 1931-32	Levy for Fiscal Year 1934-35	Percentage Reduction From 1931-32 To 1934-35
Allegany	$1,381,699	$985,500	28.7
Anne Arundel	1,274,426	850,306†	33.3
Baltimore	3,166,694*	2,339,310†	26.1
Calvert	132,102	63,719	51.8
Caroline	305,442	152,530	50.1
Carroll	687,358	392,967	42.8
Cecil	557,073	310,676	44.2
Charles	133,181	89,028	33.2
Dorchester	454,276	218,198	52.0
Frederick	952,796	627,575†	34.1
Garrett	377,688	179,471	52.5
Harford	621,276*	482,241†	22.4
Howard	335,360	202,822	39.5
Kent	300,869	140,382	53.3
Montgomery	1,299,067	874,418	32.7
Prince George's	914,929	617,855	32.5
Queen Anne's	270,641	125,640	53.6
St. Mary's	132,911	79,939	39.9
Somerset	229,658	124,116	46.0
Talbot	311,877	178,164	42.9
Washington	1,021,803	652,946	36.1
Wicomico	490,082	282,271	42.4
Worcester	324,003	193,575	40.3
Total	$15,675,211	$10,163,649	35.2

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*For calendar year 1931.
†For calendar year 1934.

Wide variations in per capita, and per cent of levy, expenditures exist among the various counties in respect to the costs of government, especially the items of general government overhead and law and order. There are many detailed problems in respect to the work of the various county officials that should be studied. In many cases the manner of bookkeeping, calculating tax bills and other mechanical processes may properly be scrutinized. Your committee recommends that local farm organizations study the financial set-up of their respective counties with the view of discovering possible ways of additional economy.

While it may be looking far into the future, we may well give attention to the possibilities of increasing efficiency and economy in local governmental expenditures through the following methods:

1. Combining certain existing offices and functions of two or more counties or several areas or units within a county.
2. Redistricting the taxable resources of the State into governmental units of such size as will economically utilize a full-time one-man, or any multiple thereof, set of county officers.

The Net Income Tax

Wisconsin was the first State to adopt the modern net income tax. From 1911 the State income tax expanded rather slowly until 1928, when there were only eleven States which had such a tax. Within recent years considerable activity has been manifested in this form of taxation both in respect to its enactment in other States and in the strengthening and improvement of the rates and the administration of the tax.

The following twenty-two States impose progressive rates of taxes upon the net income of indivduals: Alabama, Arizona, Arkansas, Delaware, Georgia, Idaho, Iowa, Kansas, Minnesota, Mississippi, Missouri, Montana, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, Utah, Virginia and Wisconsin. In addition, the following States impose a net income tax on certain kinds of individual incomes: Massachusetts, New Hampshire, Vermont and Tennessee.

It is true that the revenue from a net income tax is irregular and that the tax falls upon a rather selected and small group of individuals. However, these arguments against a net income tax do not constitute sufficient weight to outlaw it from the Maryland State tax system. Despite the fact that such a tax would not be an adequate and adaptable source of revenue to take care of an emergency situation, such as unemployment relief, there is need for such a tax as a permanent feature in a comprehensive and equitable tax system for Maryland.

At the present time, there is no allocation of tax revenue between the Federal and State governments. Until the time is at hand when the Federal Government shall lay claim to a particular tax, such as an income tax, there will be some duplication of taxing measures between the Federal and State governments. In view of this fact, the State cannot hope to obtain as much revenue from a net income tax on the same individuals as the Federal Government does.

Table 1 gives the amount of revenue obtained by the Federal Government from a net income tax on individuals in Maryland and the three near-by States of Delaware, Virginia and North Carolina. This table points out that such revenue from Maryland amounted to approximately $10,000,000 in 1932, $9,100,000 in 1933, and $9,800,000 in 1934. A similar amount of revenue from a State income tax on individuals would be highly improbable due to the fact that the Federal rates of taxation duplicated for State taxation would be prohibitive. The Federal rates on individual net incomes are as follows: The first $4,000 of net income, 4 per cent; in excess of $4,000, 8 per cent and a surtax of from 1 per cent (beginning at $6,000) to 55 per cent.

We may better judge the amount of revenue that might be obtained from an income tax on individuals in Maryland by studying the revenue receipts from such a tax in near-by States. Table 2 estimates the amount of revenue that could have been obtained from a net income tax on individuals in Maryland for the last three fiscal years, based upon laws similar to those in the three States of Delaware, Virginia and North Carolina. For instance, for the year ending in 1934, a net income tax law in Maryland similar to that in Delaware would have produced approximately $1,000,000; with a law similar to the Virginia net income tax law the revenue would have been $2,100,000; and with a law similar to that of North Carolina, $2,600,000.

Table 2. Receipts From a Net Income Tax On Individuals in Maryland and in Three States Near Maryland, 1932-1934.

Year Ending In	Federal Income Tax			
	Delaware	Virginia	North Carolina	Maryland
1932	$3,522,007	$1,989,198	$2,448,663	$10,026,373
1933	4,342,271	2,142,654	3,278,236	9,148,879
1934	5,011,958	2,496,072	4,616,309	9,859,279

	State Income Tax		
	Delaware	Virginia	North Carolina
1932	$577,016	$1,250,938	$1,597,696
1933	653,830	937,907	929,242
1934	691,655	538,450	1,233,615

Table 3. Estimated Receipts That Could Have Been Obtained From a Net Income Tax On Individuals in Maryland, 1932-1934*

Year Ending In	Probable Receipts in Maryland With Net Income Tax Law Similar to That of—		
	Delaware	Virginia	North Carolina
1932	$1,251,977	$6,305,240	$6,541,976
1933	1,033,182	4,004,751	2,593,322
1934	1,020,442	2,126,833	2,634,692

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*Assuming that the distribution of net income groups in Maryland is similar to those in the other States, which seems to be reasonably so in the case of North Carolina and Virginia, but not so much so with Delaware.

Also assuming that the relative importance of kinds of income and exemptions under the laws of the three States would be the same for Maryland.

The three States referred to above have the following tax rates and exemptions for individual net incomes:

	Rate of Tax	Exemptions
Delaware:	1% on first $3,000	Single persons.......$1,000
	2% on next $7,000	Married persons....$2,000
	3% on excess of $10,000	Each dependent.... $200
Virginia:	1½% on first $3,000	Single persons.......$1,250
	2½% on next $2,000	Married persons....$2,800
	3% on excess of $5,000	Each dependent.... $400
North Carolina:	3% on first $2,000	Single persons.......$1,000
	4% on next $2,000	Married persons....$2,000
	5% on third $2,000	Each dependent.... $200
	6% on excess of $6,000	
	6% on income from stock of foreign corporations held by individuals.	

Inheritance Taxation

Most States tax both direct and indirect heirs on the net amount of property inherited or bequeathed. There are only four States without inheritance tax laws, and one of those States has a State estate tax. There are only two States that have no inheritance tax that does not tax inheritances of direct heirs, namely, New Hampshire and Maryland.

A survey of the taxes imposed upon inheritances shows that the inheritance tax now employed in Maryland is very small compared with other States, and especially small when compared with near-by States. The proposal of the farm organizations that the inheritance tax rate be increased and graduated, and applied to direct as well as indirect heirs, is in recognition of the fact that this method of taxation is not being utilized to the extent to which it should, and consequently much property which escapes taxation during the life time of the individual also escapes the inheritance tax.

Table 4. Summary of Inventory of Decedents' Estates in Maryland October 1, 1931 to March 31, 1934.

Kind of Property	Baltimore City		Four Counties[1]		Total	
	Amount	Per Cent of Total	Amount	Per Cent of Total	Amount	Per Cent of Total
Personal (tangible)	$6,345,806[2]	7.95	$985,253	3.21	$7,331,059	6.6
Cash	10,636,204	13.32	3,092,122	10.08	13,728,326	12.4
Stocks:						
Maryland Corporation.	11,897,589	14.90	17,181,089	55.99	29,078,678	26.3
Foreign Corporation[3]	13,708,624	17.16	2,080,634	6.78	15,789,258	14.3
Bonds:						
Maryland Corporation.	1,715,381	2.15	262,077	.85	1,977,458	1.8
Foreign Corporation[3]	11,148,756	13.95	825,170	2.69	11,973,926	10.8
Government	16,972,216	21.25	2,101,159	6.85	19,073,375	17.3
Notes, Mortgages, etc.	4,014,596	5.03	2,203,475	7.18	6,218,071	5.6
Real Estate	3,426,957	4.29	1,955,612	6.37	5,382,569	4.9
Total	$79,866,129	100.00	$30,686,091	100.00	$110,552,720	100.0

[1] Anne Arundel, Baltimore, Montgomery and Prince George's Counties.
[2] Includes leaseholds.
[3] Corporation of other States and foreign countries.

Table 4 shows that a large percentage of the estates going through the Orphans' Court, and consequently subject to inheritance taxation, is composed of those kinds of properties upon which no current direct taxes are imposed by the State or local government. For instance, 17 per cent of the total estates were composed of government bonds, and about 60 per cent of the total was made up of property not subject to current direct taxation.* It is apparent that considerable income producing property may pass from the decedent to heirs without being taxed during the life or after death of the decedent. A scientific inheritance tax, such as recommended in this report, proposes to close the gap in the taxation of such properties, to the end that all properties shall be subject to direct taxation.

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*This does not include life insurance death benefits to the extent of $10,000,000 or more per year in recent years.

Gross estates passing through the Orphans' Court in Maryland declined from about $64,000,000 in 1931-32 to $43,400,000 in 1933-34. Net estates declined from $47,500,000 in 1931-32 to $38,800,000 in 1933-34.

Table 5. Inheritance Tax Rates for Maryland and Near-by States.*

State	Tax on Direct Heirs			Tax on Collateral Heirs		
	Exemption	Rate of Tax (Per Cent)	Graduation in $1,000's	Exemption	Rate of Tax (Per Cent)	Graduation in $1,000's
North Carolina:						
Widow	$10,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	10, 25, 50, 100, 200, 500, 1000, 1500, 2000, 2500, 3000, plus	None	4, 5, 6, 7, 8, 10, 12, 14, 16, 18, 20, 22	5, 10, 25, 50, 100, 250, 500, 1000, 1500, 2000, 2500, 3000, plus
Minor Children	5,000					
Virginia	10,000	1, 2, 3, 4, 5	50, 100, 500, 1000, plus	$4,000	2, 4, 6, 8, 10	25, 50, 100, 500, plus
West Virginia:						
Widow	5,000	3, 5, 7, 9, 11, 13	50, 150, 300, 500, 1000, plus	None	4 to 18, 7 to 25, 10 to 30	50, 150, 300, 500, plus
Others	5,000					
Ohio:						
Wife or Minor Child	5,000	1, 2, 3, 4	25, 100, 200, plus	$500	5, 6, 7, 8	25, 100, 200, plus
Pennsylvania:						
Widow	500	2	None	None	10	None
Delaware:						
Widow and Husband	20,000	1, 2, 3, 4	30, 100, 200, plus	$1,000	2, 3, 4, 5	25, 100, 200, plus
Parents and Children	3,000					
New Jersey	5,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	50, 100, 150, 200, 300, 500, 700, 900, 1100, 1400, 1700, 2200, 2700, 3200, 3700, plus	Under $500	5, 6, 7, 9, 11, 13, 14, 16	300, 700, 900, 1100, 1400, 1700, 2200, plus
Maryland	Entire Estate	None	None	All if estate is less than $500	5	None

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*Tax System of the World 1934.

Table 6. Estimated Revenue That Could Have Been Obtained in 1931-32, 1932-33 and 1933-34 From a Maryland Inheritance Tax Based Upon Rates Proposed by Maryland Farm Organizations.

(Preliminary data—subject to revision.)

Year	Size of Estates	Net Taxable Estate	Net Tax On Estates Going To Direct Heirs[1]		Net Tax On Estates Going To Indirect Heirs[1]		Total Net Tax To State
			Rate	Amount	Rate	Amount	
1931-32:	Less than $10,001	$9,241,198	0	Exempt	6	$185,332	$185,332
	$10,001 to $20,001	3,029,403	2	$32,763	6	44,851	77,614
	$20,001 to $50,001	5,557,927	3	90,164	7	130,042	220,206
	$50,001 plus	29,707,935	4	658,179	8	763,197	1,421,376
	Total	$47,536,463		$781,106		$1,123,422	$1,904,528[2]
1932-33:	Less than $10,001	$8,628,907	0	Exempt	6	$153,120	$153,120
	$10,001 to $20,001	2,737,072	2	$31,709	6	48,570	80,279
	$20,001 to $50,001	4,952,866	3	86,069	7	102,537	188,606
	$50,001 plus	23,354,557	4	541,125	8	552,569	1,093,694
	Total	$39,673,402		$658,903		$856,796	$1,515,699[3]
1933-34:	Less than $10,001	$11,183,855	0	Exempt	6	$175,558	$175,558
	$10,001 to $20,001	4,424,218	2	$54,275	6	69,449	123,724
	$20,001 to $50,001	5,739,093	3	105,606	7	105,104	210,710
	$50,001 plus	17,451,278	4	428,167	8	365,255	793,422
	Total	$38,798,444		$588,048		$715,366	$1,303,414[4]

[1] After deducting 12½ per cent allowed Register of Wills office.

[2] Compared with a State revenue of $785,675 obtained from that source in that year.

[3] Compared with a State revenue of $590,488 obtained from that source in that year.

[4] Compared with a State revenue of about $509,000 received from that source in that year.

Table 7. Estates of Decendents in Maryland 1932, 1933 and 1934.[1]

Year Ended Sept. 30	Gross Estate	Net Estate	Net Estate Taxed Under Present Law		Net Estate Not Taxed Under Present Law	
			Amount	Per Cent of Total	Amount	Per Cent of Total
1932	$64,056,637	$47,536,463	$17,467,766	36.7	$30,068,697	63.3
1933	49,700,997	39,673,402	13,395,809	33.8	26,277,593	66.2
1934	43,422,283	38,798,444	11,620,078	29.9	27,178,366	70.1

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[1] Preliminary data—subject to revision.

Under our present inheritance tax law, which taxes indirect heirs only, 70 per cent. of the total net estates in 1933-34 paid no inheritance tax. It is apparent that the State is losing a potential source of revenue both in the amount of non-taxable property and because of the low rate applied to indirect heirs.

With a $10,000 exemption on property inherited by widows and children, and with progressive rates ranging from 2 to 4 per cent. on direct heirs and from 6 to 8 per cent. on indirect heirs, the amount of revenue that could have been obtained by the State in the 1933-34 fiscal year is estimated at about $1,300,000, as compared with $509,000 obtained in that year under the present law.

In view of the fact that State revenue from the inheritance tax has declined from a peak of $785,000 in 1931-32 to $509,000 in 1933-34, and in view of the prospects of it going still lower, this committee recommends that the inheritance tax rates be increased in a graduated manner and that the tax be applied to the inheritance of direct heirs, but at lower rates than in the case of indirect heirs.

Taxation of Horse Racing

Horse racing as a business enterprise in Maryland has declined in relative profitableness since 1929. In 1929 the net revenue for taxation purposes of the four horse-racing associations in Maryland amounted to $1,280,580. Since that year the net revenue has declined each year and in 1933 was $119,204. This rapid decline in the profitableness of horse racing in Maryland has precipitated considerable discussion as to whether or not the present taxes imposed upon horse racing might be the major factor in ultimately causing the horse racing associations to cease conducting their meets.

Perhaps the State license fee of $621,000 imposed in Maryland represents a fixed charge against the associations that might readily place them in a position whereby they could not afford to offer sufficient stakes, purses and awards to attract first class horses.

Data in Table 8 show that the amount of commissions and breakage retained by horse racing associations in Maryland declined 50 per cent. from 1929 to 1933; that the associations' revenue from admissions declined 44 per cent.; that the amount of bets declined from approximately $54,420,000 in 1929 to $28,343,000 in 1933, or 48 per cent.; and that the amount of bets per one dollar admission was $45.36 in 1929 and $42.15 in 1933.

About sixteen States tax horse racing. Kentucky is the only State which taxes horse racing solely on the basis of licenses. Other than in Kentucky, Louisiana, Maryland and Michigan license fees are rather minor as a source of tax revenue from horse race tracks. States legalizing betting at horse race tracks in recent years have placed the tax on the basis of a per centum of the bets or wagers, and on admissions.

It is evident that total taxes, expressed in per cent. of the amount of bets placed, are lower in Maryland than in six other States. However, the method of taxing horse racing in other States may offer less of a handicap to the associations and at the same time not be any more obnoxious to the betters. It is also true that legalized betting on horse racing is a new adventure in most of the States; and also that the general admission charge ranges from 40 cents to one dollar in the various States as compared with $1.65 in Maryland.

Table 8. Data Concerning State Horse Racing Associations in Maryland, 1925, and 1929-1933, Inclusive.

Year	Total Pari-Mutuel Bets	Revenue From Pari-Mutuel Commissions and Breakage		Revenue From Admissions	Amount of Bets Per $1.00 Admission	Total Licenses and Taxes Paid	Net Revenue as Determined For Net Revenue Tax By Maryland Racing Commission	Net Revenue Per Amount of—	
		Amount	Per Cent of Bets					Capital Stock[1]	Assessed Valuation[2]
1925	$54,315,264	$3,195,977	5.86	$1,072,972	$50.62	$861,253	$1,099,844.59	48.80	26.38
1929	54,419,867	3,163,410	5.81	1,199,851	45.36	873,575	1,280,579.84	56.81	30.72
1930	47,754,676	2,796,080	5.85	1,103,195	43.29	810,063	854,758.23	37.92	20.50
1931	45,232,597	2,633,440	5.82	931,220	48.57	802,712	840,935.08	37.31	20.17
1932	35,306,932	2,078,223	5.88	891,906	39.58	738,342	311,469.12[2]	13.82	7.47
1933	28,342,784	1,535,717	5.45[3]	672,398	42.15	974,048[4]	119,204.04	5.29	2.86

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[1] Based on capitalization of association in 1934 as follows:

Southern Maryland Agricultural Association of Prince George's County	$600,000
Maryland State Fair, Incorporated	1,000,000
Maryland Jockey Club of Baltimore City	454,000
Harford Agriculture and Breeders' Association	200,000
	$2,254,000

[2] Based on the highest tax assessment on property for State and local taxation during the years involved as follows:

Southern Maryland Agricultural Association of Prince George's County	$736,000
Maryland State Fair, Incorporated	825,000
Maryland Jockey Club of Baltimore City	1,800,000
Harford Agriculture and Breeders' Association	808,000
	$4,169,000

[3] Excluding the 1% State tax on pari-mutuels.

[4] Year in which the 1% State tax on pari-mutuels was imposed.

[5] One company showed a deficit of $30,607.

Table 9. State Licenses and State and County Taxes Paid by Four Horse Racing Associations in Maryland, 1925, and 1929 to 1933, Inclusive.

Year	License Fees	15 Per Cent of Net Revenue	1 Per Cent Pari-Mutuel Tax	Other Taxes (Property Taxes)	Total Taxes
1925	$621,000.00	$181,336.31	....	$58,916.96	$861,253.27
1929	621,000.00	192,086.98	....	60,488.02	873,575.00
1930	621,000.00	128,213.73	....	60,849.72	810,063.45
1931	621,000.00	126,140.27	....	55,571.37	802,711.64
1932	621,000.00[1]	51,311.37	....	66,030.56	738,341.93[1]
1933	621,000.00[1]	17,880.62[2]	$267,252.51[3]	65,914.42	974,047.53[4]

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[1] Excludes $54,000.00 for charity days.
[2] Excludes $7,593.69 for charity days.
[3] Excludes $16,175.33 for charity days.
[4] Excludes $77,769.02 for charity days.

Table 10. Comparative State Taxes Imposed Upon Horse Racing in Eight States.[1]

State	Year Ending	Amount of Taxes Imposed				Total Amount of Bets or Wagers	Total Taxes as Per Cent of Total Bets or Wagers
		Licenses	Admission Tax	Pari-Mutuel Tax	Total Tax		
California	June 30, 1934	$7,032	None	$252,625	$259,657	$6,315,625	4.10
Florida	June 30, 1934	26,934	$102,185	496,173	625,292	16,539,100	3.78
Kentucky	Dec. 31, 1933	245,667	None	None	245,667	No data	No data
Maryland	Dec. 31, 1933	621,000[2]	None	267,253	908,133[3]	28,342,789	3.20[3]
		675,000[4]			985,902[4]		3.48[4]
Michigan	Oct. 6, 1934	400,000	80,000	....	480,000	No data	No data
New Hampshire	Oct. 30, 1934	4,708	None	675,340	680,048	19,290,000	3.52
Washington	Oct. 30, 1934	6,542	None	149,060	155,602	2,981,200	5.22
West Virginia	Sept. 30, 1934	None	1,128	64,180	65,308	1,283,600	5.10

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[1] Property taxes excluded.

[2] Excludes $54,000,00 for charity days.

[3] Includes net revenue tax, but excludes all licenses and taxes on charity racing days.

[4] Includes licenses and taxes on charity racing days.

Until recent years horse racing was confined largely to Maryland and Kentucky. But competition is growing rapidly in this field. In order that the Maryland horse racing associations may compete favorably with those of other States, it is essential that the total amount of "take," which included the commissions with breakage allowed the association, and the total taxes be lower than in other States. By keeping the total "take" low, the association is able to offer stakes, purses and awards that will attract the best horses, which in turn would undoubtedly attract betters (especially the large professional betters), and encourage the breeding of horses in Maryland.

The taxation of horse racing in Maryland deserves careful study in order that the tax may not impair the economic condition of those enterprises connected directly or indirectly with horse racing, and also not impair this source of tax revenue to the State.

In light of the present financial situation confronting the horse racing associations in Maryland, we recommend that consideration be given to the possible effects, both upon the State revenue and upon horse racing associations and allied enterprises, of transferring a part or all of the total tax load on those associations from the basis of license fees to either a greater participation in the net revenue, or an increase of the pari-mutuel tax. It is also logical to assume that if the general admission charge were reduced, more people would undoubtedly be encouraged to attend the races and place their bets at the track rather than with the bookmakers.

New Sources of Revenue Other Than Net Income Tax

With the pressing need of tax revenue to provide for unemployment relief, old age pensions and other social conditions, it is quite apparent that new sources of tax revenue will have to be found by the State if the existing sources cannot provide for the same. Due to the emergency of the situation, it is likely that the State will have to resort to methods of taxation that would not be normally utilized. It is unlikely that property owners would agree to an increase in the property tax levy to provide for relief. It is also quite obvious that the existing sources of State revenue, possibly with the exception of the inheritance tax and the property tax on intangibles, are being utilized to the fullest capacity.

There are three major tax revenue sources which have not as yet become a part of the Maryland tax system. A net income tax, which is discussed in the previous part of this report, may not offer sufficient possibilities as an emergency measure for relief purposes, but it should be permanently established as a part of our tax program. This leaves the sales tax and a gross income tax as means of raising substantial amounts of revenue for emergencies.

One of the convincing recommendations of a general sales tax is the fact that under emergency situations it will produce substantial amounts of revenue. Table 11 shows the amount of revenue obtained from a general retail sales tax in various States. The sales tax has always been cited as highly regressive, in that it falls with greater severity upon persons with small incomes than upon persons with large incomes. However, on a per capita basis, it is a relatively small tax upon individuals, regardless of wealth; and by virtue of the fact that the wealthier spend more, they also pay more tax on this basis. A retail sales tax is the most popular form of sales tax, and is now used by ten States. The rate generally applies to all retail sales uniformly and varies from one-half to 1 per cent. in Missouri to 3 per cent. in Michigan. It is either concealed in the price of the product or added in such a way as the consumer will know the amount of the tax he pays.

Several States have adopted what has been called a "gross income tax," which is a combination of a gross receipts tax and an income tax. The rate of tax ranges from a small per cent. (usually less than 1 per cent.) on manufacturing, wholesaling and farming businesses, to as high as 5 per cent. on certain types of retail sales or professional incomes.

Table 11. Retail Sales Tax Revenue to Various States, 1933-34.

State	Rate of Tax	Actual or Estimated Year's Yield of Tax*	Tax Per Capita
California	2½%	$49,865,640	$8.10
Illinois	2%	36,632,933	4.67
Iowa	2%	12,000,000	4.83
Kentucky	3%	8,680,000	3.27
Michigan	3%	34,220,916	6.72
Missouri	½ of 1%	1,813,440	.49
North Carolina	3%†	6,014,937	1.82
Oklahoma	1%	3,441,722	1.40
Utah	2%	1,868,400	3.59
West Virginia	2%	6,960,072	3.90

[1] Estimates based on a part year's return where the amount of a full year's revenue was not available.

[2] Wholesalers subject to tax of 1/25 of 1 per cent.

The gross income tax has been quite favorably received in as much as it reaches all tax-paying groups and all kinds of incomes at a relatively low per capita tax. In addition, it embodies the features of both a sales and a net income tax, either of which has its group of objectors. Thus, a gross income tax would spread the tax base, reach the largest number of taxpayers directly, and minimize the burden on all concerned.

Table 12. Gross Receipts or Gross Income Tax Revenue to Various States, 1933-34.

State	Rate of Tax	Actual or Estimated Year's Yield of Tax*	Tax Per Capita
Arizona	⅛ of 1% to 1½%	No data	....
Indiana	¼ of 1% to 1%	$11,665,031	3.53
Mississippi	⅛ of 1% to 2%	3,441,538	1.67
New Mexico	¼ of 1% to 2%	No data	....
South Dakota	¼ of 1% to 2%	2,250,000	3.19
Vermont	⅛ of 1% to 4%†	No data	....
Washington	1/10 of 1% to 5%	4,053,960	2.52

[1] Same as [1]Table 11.

[2] On retail sales only.

Under a retail sales tax only the money which goes through retail stores would be taxed. Millions of dollars not spent in retail stores would not be reached. The effect would be that the person with a small income, virtually all of which is spent in retail stores, would pay more taxes under the sales tax than under a gross income tax with no exemption, and probably twice as much under a retail sales tax as compared with a gross income tax with an exemption of $1,000.

Your committee will give more detailed study to the characteristics of various kinds of sales and gross income taxes as soon as such data are available. In light of the previous findings of this committee and in view of the discussions contained in the foregoing report the Joint Committee of the Maryland State Grange and the Maryland Farm Bureau Federation makes the following recommendations on our taxation policy.

1. State Aid.

That the increase in the amount of State aid to the counties as established by the State Legislature in 1933 (which made possible the reduction in property tax levies) be continued.

2. Economy.

That there be continued scrutiny of governmental expenditures looking towards further reduction and savings where possible and feasible without impairment of government. As one means of economy it is recommended that the number of county commissioners for any county be limited to three. It is further recommended that a detailed study be made in each county to further this end.

3. Income Tax.

That the State Legislature enact, as a permanent feature of our tax system, an income tax law on individuals as a method of securing revenue, a portion of which should be allocated to the counties thereby making it possible to lower the property tax.

4. Inheritance Tax.

That the present Maryland inheritance tax be modified so as to tax property transfers by gifts or inheritance to both direct or lineal descendants, and more remote relatives, at the following rates:

For direct lineal heirs:

Exempt up to $10,000 (providing no more than $10,000 be exempt on any estate).

2% on $10,000 to $20,000
3% on 20,000 to 50,000
4% on all over 50,000

For indirect or more remote heirs:

6% on first $20,000
7% on 20,000 to $50,000
8% on all over 50,000

5. PARI-MUTUEL BETS.

That careful consideration be given to possible sources of revenue to the State from the race tracks to the extent that the present revenue will not be impaired and that the interests and welfare of horse-breeders and the race tracks may be maintained.

6. GREATER STATE AID FOR SCHOOLS.

That State revenues be used towards reduction of the county school tax rate, to the extent, that no county shall be required to levy for school purposes more than 30c per $100 of assessed valuation.

7. RELIEF.

That the counties and Baltimore City be required to provide their respective relief costs, aside from the contributions of the Federal Government, by some means of taxation other than a general property tax. It is felt that if careful study is given to the relief problem and that if a practical method of providing relief is followed, the relief costs can be substantially reduced and held in check. It is further felt that this can only be accomplished where local parties are responsible for this relief program.

8. FARM ASSESSMENTS.

That in as much as farm real estate in Maryland has declined in value approximately 24 per cent. since 1928 (the last general assessment), we recommend, in the event of a reassessment in 1935 as now provided by law, that the depreciation in farm real estate values be taken into consideration. In as much as farmers contribute a large part of the total tax load of Maryland citizens, we recommend that agriculture be represented on the State Tax Commission, whose function it is to equalize the assessment of all properties throughout the State.

9. LAND AND BUILDING ASSESSMENT.

That farm lands and buildings be assessed as a unit and that the assessment of buildings should be based upon their use for agriculture purposes.

10. COLLECTION PROCEDURE.

We recommend that there be uniformity among the counties in respect to the following tax collection procedure:

a. That all taxes be collected within the current levy year.

b. That those properties which are tax delinquent at the end of the current levy year be subject to sale for such tax liens within four months.

c. That tax bills be so prepared that they will be in the hands of taxpayers for payment in the first month after the levy or the first month of the fiscal year.

d. That a discount on taxes of 2 per cent. be allowed the first month, 1½ per cent. the second month, 1 per cent. the third, and ½ the fourth, and that interest be charged at the rate of ½ per cent. a month thereafter.

Respectfully submitted,

D. G. HARRY, *Chairman,*
C. E. WISE, JR., *Secretary,*
E. T. MASSEY,
H. H. NUTTLE,
C. T. COCKEY, JR.,
T. B. SYMONS,
R. C. F WEAGLEY,
T. S. ANDERSON,
T. ROY BROOKES,
W. P. WALKER,
S. H DEVAULT,
A. G. ENSOR,
HOMER REMSBERG.

MR. TURNER: We all know that the Governor has appointed a committee to study the milk control law. The Resolutions Committee tried to get up a resolution as to just what this convention thinks the milk control law should be. It decided and, in fact, we found a good deal of objection to anything that was put up. I do not think, however, that this convention ought to adjourn without a resolution in reference to it, and several of us have prepared the following resolution:

"In view of the probability that the 1935 Maryland Legislative session will create a milk control board, the Maryland Farm Bureau Federation hereby recommends that the functions of this board be limited to arbitration—but with adequate powers to enforce its decisions, and whereas, the cost of this board will be borne by the industry, we demand that the cost be held down by limiting salaries of said board to the lowest possible point.

Mr. P. A. Mann of Baltimore County seconded the resolution which was moved for adoption by Mr. Turner.

MR. HARRY: As a member of the Governor's Committee and also of the Maryland Dairy Association, I hope that this board will be created. There are about 88,000,000 gallons of milk produced in Maryland every year, Baltimore City alone uses 53,000 gallons of milk every day—a right large industry. We believe it is the opinion of every member of the committee, together with thirty or forty people representing the industry, that we ought to have some sort of legislation to protect everyone in the industry—the consumer as well as the producer—legislation all along the line. That is what we want and I think I voice the sentiment of that committee. Now, we have the Vermont law before us, and we took it to two constitutional lawyers, Mr. Archer and Mr. Page, and they found that it had points in it that would not suit us. We must have a law that has more power in it. You all remember the milk war in Baltimore City that brought milk down to eight cents a quart, that means the loss of thousands of dollars to the producer. We thought if we had a commission with power to act definitely that would take care of all that—if it is a good commission it will do a good job, if a poor commission it will not. It is like a doctor or anybody like that. At one time I sat in Baltimore City with twenty-one dealers representing 91½ per cent. of the milk producers to work out a plan, but the other 8½ would not come along. If we had the power we could make those fellows come along. Now, I hope if the commission is appointed it will not have much to do. I know that in Harford County milk was sold for ten cents a gallon by the producer, and it brought ten cents a quart on the street. If authority were vested in a milk board that could not happen. I hope we get some legislation through. It all depends on the commission itself. If we get some one absolutely in sympathy with the industry as a whole, not for six months or a year, but to last along for years, a lot of good may come from it, but if it is a poor commission it may do a lot of harm.

MEMBER: May I ask that the resolution be re-read.

Resolution read and carried.

The following resolution was presented by Mr. Austin who moved its adoption:

RESOLUTION No. 21.

Resolved, That we recommend that the control of tomato acreage be provided for either through marketing agreements or by making this crop a basic commodity, and we recommend that the Adjustment Act be amended so as to give authority to the Secretary of Agriculture to provide for a reasonable return on this crop.

Mr. Nuttle seconded the motion and it was carried.

Dr. T. B. Symons took the chair.

DR. SYMONS: Gentlemen, we approach the hour for the election of officers of the Maryland Farm Bureau for the ensuing year. The chair is ready to hear nominations from the Secretary and the Association.

MR. WISE: The report of the Nominating Committee is as follows:

For president—Mr. Charles T. Cockey, Jr.

For vice-president—Mr. H. H. Nuttle.

DR. SYMONS: You have heard the nominations. The constitution provides that nominations may be made from the floor. If there are none, what is your pleasure?

MR. LUPO: I move the nominations be closed and the Secretary be instructed to cast the ballot. The motion was seconded and the report was unanimously accepted.

MR. WISE: I cast the ballot for Mr. Charles T. Cockey, Jr., for president; and Mr. H. H. Nuttle for vice-president.

DR. SYMONS: The chair announces that Mr. Charles T. Cockey, Jr., has been duly elected president for 1935, and Mr. H. H. Nuttle has been duly elected vice-president for 1935 of the Maryland Farm Bureau.

The chair adds his personal tribute to these officers and calls on the new president for a speech.

MR. COCKEY: Now, gentlemen, I appreciate this compliment, a vote which evidently means approval of what your organization is doing. I, of course, have something to do in the directing of our activities. With the assistance of our Secretary we have progressed this year over last, and I hope with your assistance, with the assistance of all our members, because we need that, that we will in 1935 accomplish more than we did in 1934. I would like to say that we invite your criticism. This is your organization, and we will never resent any remark which you make or any suggestion which you will make. You will find us in a most receptive mood along those lines because then we can, in a measure, read your minds from the various sections of this State. I hope that I will be able to conduct this business of yours this year to your satisfaction. I want to thank you again for your vote of confidence. I believe, ladies and gentlemen, you have a great deal more confidence in my ability than I deserve, but I hope that next year will be a more successful year for us than the past.

I would like to make an announcement here. The Board of the Farm Bureau will meet immediately after this. There will also be a meeting of the Agricultural Corporation Board following the adjournment of this meeting.

Now, gentlemen, don't you think it would be a right good idea to have our good friend, our good and able speaker from the Eastern Shore, Mr. H. H. Nuttle, to speak to you?

MR. NUTTLE: You know I began to look around for a good, able speaker. I have been sitting here thinking about Cy. Jones and his Garden of Eden, and I wondered if when you got in the Garden of Eden you got women's names mixed up. Seriously, I appreciate the honor. It is a privilege to work with you men of the Farm Bureau. As I said last year the Vice-

President is really a sort of a spare tire, he does not have much to do, but I believe in farm organization and am willing to do everything I can.

MR. COCKEY: Gentlemen, if there is no further business before you delegates, a motion to adjourn is in order.

Motion made, seconded and carried, and the meeting thereupon adjourned at eleven-thirty.

PROCEEDINGS

OF THE

THIRTY-SEVENTH ANNUAL MEETING

OF THE

Maryland State Horticultural Society

College Park, Maryland

January 2, 3 and 4, 1935

The meeting was called to order at 1.30 P. M., January 2, by Vice-President Fulton W. Allen, who presided in the absence of President Raymond C. Hanson. Mr. Allen called for the report of the Secretary-Treasurer.

REPORT OF THE SECRETARY

By A. F. VIERHELLER
College Park, Maryland

It is the sad duty of your Secretary to report the death of three members of the Society. On February 8 our President, Mr. W. Earle Withgott, passed away. We were again saddened to hear of the sudden death, on June 17, of Mr. Henry Klee, a prominent grower of Carroll County. Then, on October 18, came the news of the passing of Mr. J. Walter Englar, who was a former President of this Society. Nothing that I can say will add to the character of these men. Quiet, and unassuming, they were fine, clean-cut men, whose advice and friendship were treasured by those who knew them.

There is no need to tell you of the problems of the fruit growers during the past year. You know them. We predicted a total loss of the peach crop by the severe February freezes, but at harvest a 10 per cent. crop was reported. Fortunately, there was very little loss of peach trees, except where trees were very weak. The apple crop appeared short or spotty, but in the end there was a rather good crop. There was a heavier storage of fruit this year than usual, there being a heavy increase in common storage. The market varied with the grower, and in general the crop moved fairly well. The year 1934 was outstanding in the thorough job of spraying done by the growers, and also by the very high percentage of clean fruit produced, ranging as high as 95 per cent. in some orchards and varieties.

As Secretary I have attended to matters pertaining to problems of the fruit growers, as they affected Maryland or the entire fruit growing industry, and have called freely upon members of the Executive Committee for their counsel. Since the entrance of our Society into the Eastern Apple Growers' Council, there have been several matters considered that were of interest to Eastern fruit growers in general. I only trust that I have handled the affairs of the Society to your satisfaction, and want to thank you all for your fine cooperation.

Practically the entire lower floor of the Horticultural Building is filled with all sorts of orchard supplies, equipment, machinery, fruit washers, fruit displays, and there are two rooms full of educational exhibits staged by the various departments of the University. I urge you to look over the exhibits carefully. See everything before you go home.

REPORT OF THE TREASURER

By A. F. VIERHELLER
College Park, Maryland

The Treasurer gave a complete account of moneys handled during the year, stating that the books were open at any time for inspection, and reported a cash balance of $411.13 on January 1, requesting that a committee be appointed to audit the books of the Society.

ADDRESS

By FULTON W. ALLEN
Fruit Grower
Salisbury, Maryland

Because of the death of our esteemed President, Mr. W. Earle Withgott, and the absence of his successor, Mr. Raymond C. Hanson, I have been asked to preside at this meeting.

The Society has cause to congratulate itself upon its accomplishments. We have brought the standard of our programs to a point where there are few better pomological programs in the country.

The Society, through the efforts of some of its more active and ardent members, is responsible for the establishment of this Horticultural building, which we now occupy. This is of special value to the horticultural interests of this State, not only as an aid to the training of the college youth, but as a place where the commercial businesses may exhibit their wares of horticultural interest to the fruit, vegetable and flower growers and the nurserymen and commercial canners of this State; providing a place for the horticultural scientists to do their work with greater facility and convenience; and affording a meeting place and a source of information for those engaged in the various lines of horticulture.

The old reason for holding the horticultural meetings in different parts of the State in order that as many fruit growers as possible might be able to attend passes with the advent of automobile transportation.

It is urged that those interested in the various phases of horticulture may avail themselves of the assistance offered by the Horticultural Department, Experiment Station and Extension Service, not only during these meetings, but at any time during the year as the need for such service arises.

I ask that you take an active part in the discussions during the meetings, and visit the fine exhibits which have been set up for you.

FRUIT RUSSETING AND FOLIAGE INJURY

By DR. J. H. GOURLEY
Chief, Department of Horticulture
Ohio State University
Columbus, Ohio

For many years attention of fruit growers has been directed toward the control of insect pests and diseases by spraying. Throughout this period the russeting of the fruit and burning of foliage has been accepted as a natural concomitant of spraying even though the cure was almost as bad as the trouble which we wished to avoid. Yet an apple with a clear skin brings a premium on our American markets and healthy foliage is known to be essential for the best functioning of a tree. Therefore, it becomes a matter of first importance to find a satisfactory control of insects and diseases which will not injure the tender tissues to which it is applied.

In this connection it may well be emphasized that the physical or mechanical handling of fruit is also of prime importance. Too much bruising occurs in the picking operation, in pouring fruit from one container to another, and in passing the fruit over the washing machines and sizers. The Federal inspector of fruits in Ohio tells me that nearly half the fruit that is thrown out of the first grade is due to bruising. Rigid picking receptacles rather than bags for picking peaches and apples would do much to avoid this trouble. The market should then recognize the superiority of such fruit and pay for it accordingly. This latter is not so easily accomplished.

Some Factors Involved in Russeting

The causes of russeting and the factors involved are many and varied and may be grouped into several categories. Any classification is rather arbitrary, and yet they may be conveniently grouped as follows:

1. Heredity.
2. Mechanical means.

3. Chemical and physiological causes.
4. Weather conditions.

Heredity.—Russet apples are familiar to the pomologist in such varieties as Rosbury or Putnam Russet, Golden Russet, Pomme Grise, and, to a more or less extent in Westfield See-No-Further, Hubbardston Nonesuch, Cox Orange, Blenheim, Tolman Sweet, and others. These apples may be practically free of russet, or, in the case of the first three, they may be entirely covered with it. Like some other hereditary factors, this one has a wide range of expression under varying environmental conditions. Since we expect more or less russeting with these varieties, they would not be typical without it; hence, the problem of injury treated in this paper does not apply to them.

Mechanical means.—Frequent cases of russeting occur from purely mechanical causes such as limb rubs, insect injuries, and hail marks. In these cases the superficial cells are destroyed by friction or bruising or by the mouth parts or ovipositors of insects. To this list should be added the mechanical injury which results from improper use of spray appliances, such as when a coarse, driving spray strikes the tender fruit or foliage or when coarse material passes through the nozzle. This improper use of spray appliances is certainly within the control of the orchardist, and the other injuries are likewise to some extent within his control. In any attempt at classification one must recognize these mechanical causes as distinct from the other types.

Chemical and physiological causes.—There are some types of russeting that are due directly to sprays that are too concentrated, too caustic, or too penetrating if used when the surface of the apples is tender and before much cuticle has been formed. Furthermore, the sprays may be toxic even though the cuticle has been formed. Bordeaux injury is likely to develop progressively through the season; whereas lime-sulfur burning may be immediate. The same is true, respectively, of certain bordeaux and sulfur dusts.

Obviously, such injury is chemical in nature, and the responsibility rests with the orchardist. Since weather conditions and variety are intimately involved, it means that a rule-of-thumb method for all varieties and in all weather conditions will not prove satisfactory.

Weak trees or those of low vitality are more susceptible to foliage and fruit injury than the vigorous ones. The exact nature of their susceptibility may not be clear in all cases, but russeting on trees of low vitality has often been experienced by orchardists and experimenters. Such a case is physiological in nature.

Weather conditions.—Since adverse weather conditions constitute such a common cause of russeting, it is desirable to classify them apart from the other three. True, there is an intimate relationship between spray injury and weather; on the other hand, "weather russeting" is of common occurrence although no spraying has been done.

Topography

Of all the factors associated with russeting none is more pronounced than the topography of the land, in that it operates indirectly with the causal agents involved in russeting. In 1933 there were many examples of this in Ohio. In an orchard situated on land which is undulating or where depressions or coves occur, the fruit on the higher land where air drainage is good was much freer of russet than was that in the portions where the air is confined. All factors which cause or accentuate russeting operate more successfully under such conditions. If russeting occurs on the tops of the hills, it is usually due to improper spraying in that location or, as occasionally happens, to frost injury on high land.

Weather

As a direct causal agent unfavorable weather conditions more universally bring about russeting than any other. The experienced orchardist is aware that blemished apples are found whether or not the orchard was sprayed and regardless of the material used in spraying. The two outstanding elements of the weather which seem to be responsible are low temperatures, often accompanied by frost, and high humidity—usually both together. This is especially true when the fruit is very young or even before bloom. Bands of russet on pears and apples have long been associated with low temperature and are known as "frost rings," or the injury may take the form of "tear stains" (that is, streaks of russet extending lengthwise of the fruit). Slight injury from this cause takes the form of veining, which is a thinly spread injury covering most of the surface of the apple, especially the apical or calyx hemisphere.

Later in the season high temperatures may cause sun scald of the fruit, as is mentioned later.

Variety

Varieties vary markedly in their susceptibility to russeting. Some of the best ones are particularly susceptible and special precautions must be taken to avoid it. Among the varieties most easily russeted are Ben Davis, Gano, Baldwin, Golden Delicious, Ensee, Grimes Golden, Jonathan, and Cortland. Rhode Island Greening and Stayman Winesap are intermediate, and Rome Beauty, Delicious, and McIntosh are least likely to show it. Improper sprays or methods of spraying are especially serious with these varieties that have a tendency towards this trouble. Bordeaux mixture is the chief offender with the Ben Davis family, and, in fact, it is more likely to cause damage with all varieties than lime-sulfur.

Sprays

It is obvious from the foregoing discussion that the orchardist can do little to avoid russeting resulting from topography or weather or that found in certain varieties. However, there is much that he can do in the matter of spraying. Some of the most recent, outstanding work in this field has to do with this particular problem. Insects and diseases must be controlled, but, at the same time, the fruit must have a clear skin and attractive finish. Likewise, the foliage must be uninjured. The situation had become so bad a few years ago that many orchards were being seriously injured by sprays of too great concentration applied with too high pressure. In this regard advances have been made in our knowledge and practice.

From time to time Ballou and Lewis* have reported the results of their experiments with dilute solutions in avoiding spray injury. In the several counties in which they have worked as satisfactory control of insects and diseases has been secured when dilute Bordeaux or dry or liquid lime-sulfur was used as resulted from the use of stronger solutions.

The standard bordeaux of a few years ago was 4-4-50; later, 3-4-50, 4-6-50, 1-3-50, and ¾-2¼-50 formulas were used. Obviously, there is no "standard" bordeaux for fruit trees, since the formula is being constantly changed and is also used at different strengths for pre-blossom and post-blossom applications. Likewise, both liquid and dry lime-sulfur are being diluted to half their former strength for the cover sprays, with a material reduction in russeting of fruit and injury to the foliage. Scab and Brooks spot have been controlled up to 90 per cent. or better.

In addition to reducing injury and improving the finish of fruit by dilute formulas of bordeaux and lime-sulfur, the addition of extra lime (5 pounds to 50 gallons) to the latter solution has proven of value for the same purpose. Particularly has the characteristic browning or burning about the calyx, due to arsenicals, been obviated.

These new formulas, together with proper timing and skill in spraying, are powerful tools by which the orchardist may reduce the amount of spray injury. In fact, such varieties as Golden Delicious and Baldwin, which are easily russeted, can frequently be sprayed with arsenicals and lime only (for cover sprays) since they are not very susceptible to scab. Already much has been accomplished as a result of these experiments in securing a better finish of fruit.

Temperature at Time of Spraying

Low temperatures are involved only in the early sprays (pre-blossom) and high temperatures in the midsummer sprays, but both are to be reckoned with in spraying. Since rain or high humidity accentuates the russeting problem in the early-season spraying (during the "pink") when the temperature is unseasonably low, such conditions contribute to the trouble. However, the high temperatures of mid-summer are particularly serious, especially when lime-sulfur and oils are used. The exact temperature at which injury would occur will probably vary, depending upon the variety and atmospheric conditions. The writers are not particularly concerned with other types of injury than burning or russeting in this paper, although entire destruction of flower clusters may occur if the sprays are too concentrated, improperly mixed, or applied at a critical stage of development of the leaves and bud clusters. When the summer temperatures are above 82° F. the danger point has been reached, although injury may occur somewhat below this point or require a few degrees higher.

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*F. H. Ballou and I. P. Lewis. 1933. Dusting versus spraying apple orchards in Ohio Agr. Exp. Sta. Bull. 527.

——— and ———. 1934. Results of trials with spray and dust materials. Proc. Ohio State Hort. Soc., 67th An. Meeting, pp. 66-83.

Typical sun scald occurs frequently when no spraying is done. This occurs on the exposed cheeks of the apples, mostly on the south and southwest sides of the tree, but it is not infrequently increased when sulfur sprays are used at high temperatures. Drops of water act as lenses which converge the sun's rays and kill the underlying cells.

Gun Injury

One of the common causes of burning and other types of injury is the improper handling of the spray gun. Since the operator regulates the size of the opening in the disc, causing a coarse spray to be driven to the tops of the trees or, conversely, closes it so that the spray is a fine mist as he works the lower portions of the tree, the results depend entirely upon his skill. If the opening is not regulated constantly as he throws the spray at the different heights, serious injury is likely to occur. This injury is largely mechanical, as it results in a coarse stream striking the tender skin and foliage rather than a fine mist. This type of high-pressure spraying, at from 400 to 600 pounds pressure, caused extensive injury in 1933.

Such injury is accentuated if the material is coarse, i. e., incompletely dissolved in the solution. All of these factors are within the control of the operator and the responsibility for injury cannot be shifted elsewhere, as is the case with certain other factors.

Tender Foliage

The past season was one in which the weather conditions were such during the pre-blossom period as to develop very tender foliage. Cloudy, rainy weather that permitted scab development to a great extent also resulted in foliage such as would develop in shade—that is, almost blanched. When high-pressure outfits were used to apply concentrated solutions, particularly if the nozzle adjustments were not correct, they wrought extensive injury. This is one of the situations where adaptation to conditions and resourcefulness bring their reward.

Vigor of Tree

Here we have a typical physiological condition which results in increased susceptibility to russet. It is not easy to assign definite causes for it, but one must resort to the experience of orchardists and research workers who seem to agree in their observation that the fruit and foliage of weak trees are more easily damaged than those on healthy specimens.

Obviously, the only remedy would be applications of nitrogenous fertilizers or better cultural conditions, such as cultivation, soil drainage, removal of borers, or other causes of the weakened condition.

Summary

Russeting of the skin of apples frequently lowers the grade and selling price. This injury may or may not be within the control of the orchard operator and an analysis of the factors involved is here presented.

When the skin is slightly injured from any cause, the superficial cells are replaced by cork cells which give the surface the characteristic russet color. Beneath the epidermal layer a cork cambium is formed whose cells divide, as is characteristic of a cambium, and cork cells are produced to the outside. There may be few or many such cells cut off, giving a light or heavy russet. In this process the cuticle of the skin is destroyed, or partially so, and loss of water ensues.

Mechanical brushing or wiping machines used in the removal of spray residue did not measurably remove the cuticle, as determined by an eyepiece micrometer. This would bear out the practical experience that keeping quality of the fruit is not reduced by this process.

The chief factor of the environment associated with russeting under Ohio conditions is topography. High lands or locations with good air drainage show less of it than low lands or depressions.

Dilute or modified sprays or dusts are less toxic than caustic or concentrated ones and the injury is still further reduced by the addition of extra lime. Bordeaux mixture is more likely to cause russeting than lime-sulfur.

Coarse sprays are particularly damaging; hence the regulation of nozzles and guns is important.

Spraying when the temperature is above 82° F. and when the humidity is high is conducive to russeting.

OUR EXPERIENCE IN ORCHARD FERTILIZATION AND PREVENTION OF RUSSETING AND CRACKING OF APPLES

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This subject takes in rather too much ground to be covered well in one paper. However, we will endeavor to get the best thought out of it, as we believe the physical condition of the soil and the tree have much to do with the production of a good clean crop of fruit.

Our experience in the past seventy-five years has been principally with the soapstone and limestone soils in the Shenandoah Valley and with red shale, chert and Lewistown limestone in the mountains of West Virginia and Western Maryland.

Some one has said "destroy the soil of a nation and you pauperize its people." This is certainly as true in horticulture as in general agriculture. In our experience we have found that nothing destroys the fertility of an orchard as quickly as plowing the ground wet and allowing it to wash away from lack of humus to hold it together. Twenty-five years ago, clean culture both in growing the young orchard and in growing fruit crops on bearing orchards was advocated. But in the last fifteen years we have changed this practice to only enough cultivation to keep the weeds down and believe that our experience shows with the Pennsylvania experiment, that thorough cultivation once in two or three years is enough in bearing apple orchards. We have seen young growing orchards, double planted, and continuously cultivated to such an extent that when they got to the bearing age of ten or twelve years, the soil was so exhausted that it would only grow sheep sorrel instead of clovers and other legumes. It is a serious mistake to exhaust the soil of either a peach or an apple orchard. The man who plants an apple orchard makes an investment which will last a lifetime and the topographical location, type and depth of soil have much to do with the success of an orchard in later years. Nature takes centuries to make a virgin soil, but man by bad management can destroy all of the fertility of a soil in one generation.

Most orchards have a large investment in time, money and labor in them at ten years of age, but if the soil has been depleted it frequently takes ten years more to bring the soil back to its original fertility and the owner finds he has lost the best years of his life as well as that of the orchard. In the past we have been taught that nitrogen was the essential element in orchard fertilization, but the last five years of drought and hard times have taught us that there are other things essential to successfully fertilize the orchard. For many years we have been told to apply five or ten pounds of nitrate of soda or sulphate of ammonia per tree in the early spring each year and this will do, but we have found the single application to be a very wasteful process and now apply two pounds of nitrate early in the spring, two pounds about the first week in July and two pounds the first week in September. We also apply six pounds of a 4-16-4 fertilizer in March, along with the smaller applications of nitrate, the purpose being continuous feeding of the tree during its whole growing period. An apple tree should carry its leaves about six or seven months each year and the early September application enables the tree to keep both the fruit and the foliage growing to full maturity. This application not only enables the foliage to function to the end of the growing period each year, but we find that it holds the fruit on the tree until the fullest color of each variety is attained. This is particularly valuable in Rome Beauty, Winesap and Staymans. Many orchards this year were almost denuded of foliage by the first of October, which should have carried their leaves six weeks longer. This process robs the tree of the power to store carbohydrates and other elements just when it needs it most and makes small, weak fruit buds for the next crop. If the following season should be an unfavorable year for setting fruit, the exhausted trees and soils will of course drop out first and the strong buds will stand until the last.

We have one orchard of about 250 acres on red shale land which twenty-five years ago was in peach trees, and had been cultivated according to the dust mulch system and the soil robbed of its humus to such an extent that we had to start soiling and fertilizing at once to keep it from washing away. As an evidence of the value of improving the soil by fertilizing and cover crops, this orchard has borne eight consecutive crops and during the last thirteen years which we believe have been the hardest on crops of all kinds in our history, shows an annual packout of 95 barrels per acre with slightly over 90 per cent. U. S. No. 1 in 1933 and 87.7 per cent. No. 1 in 1934. We found vetch and rye a splendid cover crop on which to grow a young orchard, but when the orchard came in to bearing we had to change to crimson and red clover and later to a mixture of alsike, timothy and Kentucky blue grass. Vetch usually ripens too late for an orchard with a heavy crop. The advantage of sowing a mixture is that it makes more certain a stand of some kind each year on the land. Nothing devitalizes the soil more than bare land summer and winter. The run off or washing and leaching goes on through the winter as well as summer on bare land.

Our experience has been that clovers and other legumes cannot be successfully grown without lime in some form to sweeten the soil. While burned lime is more prompt in its action than ground limestone or marl, we believe marl, which is about 98 per cent. carbonate of lime, is the easiest to handle and has always given us satisfactory results.

The fertilizer bill is a heavy one in all orchards and we have found that there is a serious waste in applying fertilizer on acid soil. If the land is sour, apply lime the first thing, and use cover crops and there will be no waste of any fertilizing element. The Geneva Experiment Station in recent experiments on Baldwin apple trees shows that nitrate of soda and sulphate of ammonia as well as complete fertilizers lose much of their fertilizing value on sour land. As nitrate, sulphate of ammonia and potash are in the form of salts, they dissolve and lose by leaching very fast if there is no humus in the soil to hold them. Phosphoric acid, however, is different. It does not leach, but reverts and locks up in sour soil. When this takes place it is forever lost to plant life. The Virginia Experiment Station has found that phosphoric acid, on account of not leaching, does not reach the roots of apple trees unless it is plowed under very deeply. As this is not practical in most orchards we have found the best way to get the full value from it is to grow heavy cover crops and the roots of clovers and other legumes carry it down into the subsoil by growing long roots, which later decay and leave the phosphorus in close contact with the tree roots. We have found inoculation of all legume crops pay when sowing the first time. The cost is small and the result is very much more certain on inoculated seed.

In concluding about fertilization let us remember the soil is not an inexhaustible mine which we can work continuously and never put anything back. We would not think of continuously planting even our best soils in corn for ten or twenty years without rotating or heavy fertilizing. These orchard soils cannot be rotated, so we must feed the soil to suit their needs. If we do this we will find nature very profligate in its returns to those who work with it instead of against it.

In regard to russeting of apples, there seem to be two principal causes: spring frost and mechanical injury. Susceptible varieties like Gano, Black Ben Davis, Grimes Golden and Jonathan should not be planted in low spots with poor air drainage, but rather on locally high land which is free from the effects of spring frosts. We have seen fruit badly russeted in sections where no spraying had been done, while nearby sections with good air drainage were not affected even though they were sprayed.

Too heavy pressure with a solid stream of spray material at close range injures the cuticle of the skin of the apple and nature to protect itself covers the injury with a corky material, which later develops into russeting. We always have our spray gunners move their guns perpendicularly instead of horizontally. As they pass around the tree each part is completely covered from top to bottom and no part need be covered twice by this process. If the gun is moved horizontally the first fifteen feet of the trees as a rule gets twice as much spray material as the top and frequently the fruit is injured by having too heavy an application at close range at the bottom of the tree. It is a well-known fact that about 70 per cent. of the worms on any tree come from the tops, which are not properly covered. We insist on our spray gunners spraying clear over the top of each tree from at least four sides. This usually covers the tops as well as the sides of the trees. We also have them step into the center of each tree on opposite sides and spray straight up through the tops. This covers the under side of the leaves where the young worms start to feed and also prevents scab and other fungus diseases from starting. As a further precaution to prevent russeting, either have the gunner cut the pressure down when covering the bottom of the tree or step back three or four feet to prevent hitting too hard at close range.

Experience has shown us that it is not wise to spray when the thermometer passes 90 degrees Fahrenheit, especially with lime-sulphur. If a rain is approaching it is better to quit spraying at 85 degrees.

There seems to be a close connection between the water-holding power of the soil and cracking of apples. Cracking, we believe, was much aggravated the past season by the intense heat running from 90 to 105 degrees for over three weeks without rain in our section. We found that the chert soils which had absorbed all the water falling in twelve months on the land and stored it in the soft clay subsoil from which it came back by capillary attraction and was used later by the trees, did not suffer seriously from cracking. The red shale orchards which had grown a large number of cover crops and were well supplied with humus did not allow the water to run off, but stored it in the soil, so suffered much less than the same orchards which did not have a heavy supply of humus in the soil. It seems to us that too rapid evaporation of the water in the soil hardens the skin of the apple and cracks the skin. If there is a regular supply of moisture and fertilizer held in the soil, we believe the cracking will be very much less than in soils lacking in humus and the ability to hold moisture. The Virginia Experiment Station finds that limestone chips absorb only 10 per cent. of their weight in moisture, while an ordinary loam with a heavy supply of humus absorbs 200 per cent. of its weight in moisture. If this is true, we should certainly improve the physical condition of our orchard soils by using more humus crops and a regular supply of fertilizer during the whole growing period of each crop of fruit. We believe this matter should be given serious thought by our Experiment Stations to enable the grower to arrive at a proper mode of feeding our orchards with the proper elements of plant food applied at the right time to get the maximum results. Let us remember that the tree is a living organism and will only give its best fruits to those who treat it best. The soil is the basis of all food production the world over, and we should give it most careful study and treat it with most serious consideration in order to get the best results from our investment.

POSSIBILITIES OF ORCHARD IRRIGATION IN EASTERN APPLE CULTURE

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Any discussion of the possibilities of orchard irrigation under eastern conditions must be built upon some discussion of orchard soils and behavior of water in soils. The need for irrigation under eastern conditions varies greatly with the water storage capacity of the soil on which the orchard is growing. Therefore a discussion of orchard soils and their water-holding capacity must precede any discussion of orchard irrigation as such.

Soils vary greatly in their capacity to hold water available for plant growth. Under good drainage conditions such as are desirable for orchards, a soil will take up and hold against gravity only a certain amount of water. This amount is termed by soilsmen the *field capacity* of a soil and varies with the texture of the soil. In general the field capacity is highest in fine-textured soils and becomes progressively less as soils become coarser in texture. Clay soils are likely to have a field capacity of above 30 per cent. of the dry weight of the soil. In other words, the weight of water which they hold when wet to field capacity will be more than 30 per cent. of their dry weight. Sandy soils, on the other hand, are likely to have a field capacity of not more than 10 per cent. of their dry weight. Sandy loams and silt loams are, of course, intermediate between these extremes.

Not all of the water that a soil will hold is, however, available for plant growth. The amount of the water remaining in a soil when the plant can no longer extract appreciable quantities of water from it is termed the *wilting percentage.* This wilting percentage also varies with the texture and structure of the soil. Again in general it is higher with the fine-textured soils. A clay soil which has a field capacity of 30 per cent. is likely to have a wilting percentage of approximately 15 per cent. A sandy soil with a field capacity of 10 per cent. is likely to have a wilting percentage of 3 to 4 per cent. In general the percentage of the water which a soil can store which is available for plant growth is likely to be higher in the sandy soils. The total amount of water available for plant growth, however, is generally much greater in the finer-textured soils and becomes progressively less in the coarser-textured soils.

An inch of water represents approximately 6 per cent. of soil moisture in one foot of depth. Thus a clay soil with a field capacity of 30 per cent. and a wilting percentage of 15 per cent. will hold 15 per cent. of water available for plant growth or 2½ inches per foot of depth of the soil. A sandy soil with a field capacity of 10 per cent. and a wilting percentage of 4 per cent. will store only 1 inch of water available for plant growth per foot of depth. Thus, if we have a fine-textured soil such as a silt loam or clay loam which is 5 to 6 feet deep, we will have a storage capacity of available soil moisture of 10 to 12 acre inches. A sandy soil of the same depth is likely to have not more than half the storage capacity for available water. Thus the lighter type of soil will carry the plant only approximately half as long during periods of drought as will a heavier type of soil of the same depth. Similarly, if the soil is only 2 to 2½ feet deep it will carry the tree only approximately half as long as a soil of the same type 4 to 5 feet deep.

Normally under eastern conditions the soil moisture is at field capacity at the time growth starts in the spring. Occasionally this may not be true if extreme shortage of winter precipitation has occurred. Usually, however, the soils will be at field capacity in the spring. The main source of water loss through the summer is the evaporation or transpiration from the foliage of plants growing on the soil.

The amount of water that is required to carry an orchard through the summer season will vary with the temperature and humidity of the air. Under conditions of high temperatures and low humidities, transpiration from the foliage is much higher than during cool days with relatively high humidities. Under drouth conditions the atmosphere is likely to be dry and the demand for water is at the peak. Under such conditions approximately 4 acre inches of water per month are apparently needed to carry a mature apple orchard and to keep it functioning at near optimum under conditions in the Eastern States. Thus it will be seen that a retentive soil only 2 feet deep will store only enough water to carry the trees for approximately a month. A soil 4 to 5 feet deep will carry the trees up to two months with little or no rainfall. Well-drained soils that are retentive of moisture and in which tree roots go down to 12 to 15 feet will carry an orchard through practically a complete growing season without rainfall and without the trees suffering seriously for water. Such conditions prevail in certain non-irrigated Western orchard districts where the rainfall is almost entirely limited to the winter months.

It should be emphasized that the basic water-holding capacity of a soil is largely fixed by the nature of the soil, and we can modify it only to a limited extent by any orchard operations which we may apply. The statement is frequently made that we can increase the water-holding capacity of a soil by turning in organic matter. The addition of organic matter does, to a degree, increase water-holding capacity. Under actual orchard conditions, however, the organic matter incorporated in a soil is largely accumulated in the surface 6 inches and has only a minor effect on the total water-holding capacity of the soil. Probably the greatest value of organic matter from the moisture standpoint is in improving the absorption of water by the surface soils and thus preventing run-off during heavy summer rains. To a large extent, from the actual water-holding standpoint we must work with our soils as we have them. In establishing the orchard in the first place, however, we should consider very carefully the nature of the soil from its water-holding standpoint, as this is perhaps the most important single factor in determining the suitability of a soil for orcharding under Eastern conditions.

Effect of Moisture Shortage on Tree Functioning

We have discussed previously before the Maryland Horticultural Society the effect of reduced water supply on the functioning of fruit trees. You know that the food materials which go to build the fruit and the wood and bark growth of the tree are manufactured almost entirely in the leaves and that the raw materials from which they are built are the carbon dioxide from the air and water from the soil. The carbon dioxide enters the leaf largely through pores on the underside of the leaf, called stomata. These stomata open in the morning and remain open until the leaf loses a certain amount of water due to evaporation during the day. The number of hours per day that these stomata remain open will vary with the amount of moisture that is supplied from the soil. If the moisture content of a considerable part of the root zone is down to the wilting percentage so that the soil supplies water very slowly, the stomata will remain open for only a short period each day, and when most of the root zone reaches the wilting percentage the water supply to the tree may become so short that stomata may fail to open at all. This early closing of the stomata under conditions of water shortage is one of the earliest indications of water shortage to the tree.

Very soon after differences in the time that stomata remain open can be detected, difference in fruit growth rate can also be measured. In apples, particularly the long-season varieties, we find the growth of the fruit on a volume basis to be at nearly a uniform rate from late June through until approximately harvest time, provided moisture shortage does not occur and provided no other conditions develop to affect the functioning of the foliage. Growth on a volume basis during this period is approximately 1 per cent. a day. Under conditions of moisture shortage this growth rate is reduced, the amount of the reduction varying with the severity of the moisture shortage. In some tests we have found that the fruit practically failed to grow on dry trees during periods of as much as two weeks.

When moisture is restored after such a condition, the recovery of the trees is remarkable. If the drouth has not been so severe as to cause the dropping of foliage, fruit growth is resumed at approximately the normal rate when moisture is again supplied. If there is a period of 15 days during the season in which fruit growth almost ceases, however, the fruit will be approximately 15 per cent. smaller at harvest time. If drouth conditions prevail for as much as two months, fruit on dry trees may not be more than 50 per cent. as large as that on irrigated trees.

The color of fruit is also seriously affected by drouth conditions. If the fruit matures under conditions of water shortage, the color will be a dull bronze instead of a bright, clear red. Such fruit is lifeless and unattractive in appearance. On the other hand, excessive moisture in the last month of the growing season may also result in poorer color of fruit. Apparently the best color develops when the soil has sufficient water to maintain tree functioning at the optimum rate but when the moisture supply is not excessive.

The experiments which we have conducted indicate that biennial bearing will not be corrected by irrigation. The immediate effect of moisture shortage, if it occurs during the early summer, is to increase the number of fruit-buds formed and to increase the bloom for the following spring. Irrigation alone will not result in regular bearing of trees previously biennial. Vegetative vigor of the trees has, however, been greatly improved under conditions of sufficient moisture supply throughout the season, and this unquestionably aids in securing regular bearing in the trees. In other words, fruit thinning and similar treatments which may be applied to influence biennial bearing are more effective on vigorous trees such as can be maintained under irrigation.

When Is Irrigation Feasible Under Eastern Conditions?

The practical question is often asked, "Is it feasible to irrigate orchards under Eastern conditions?" We can answer that question only if we know the conditions in the particular orchards.

If the texture and depth of your soil is such that 8 to 10 inches of water available for the trees can be stored in the soil as a reserve at the beginning of the season, it seems questionable if irrigation will prove valuable in enough years to make the installation of a system pay in dollars and cents. With such a soil, trees will go through a two-months' drouth with no injury to the trees and with only a slight reduction in fruit growth rate. The seasons during which trees on such soil will suffer for moisture under conditions in most parts of the East are so rare that irrigation would be of questionable value.

On the other hand, many soils otherwise excellent adapted for orchards and which are on relatively frost-free locations may not be sufficiently deep to store more than 4 to 5 acre inches of water. Under these conditions, trees will suffer after not more than a month without rainfall. If such sites are planted to long-season varieties, irrigation will unquestionably pay, provided water can be secured and distributed without great expense. Under such conditions we have found the sizes and quality, as well as yield of long-season varieties such as Rome Beauty, to have been greatly benefited during two of the past five years and to have shown considerable benefit every year. During 1930 and 1932, trees on such soil produced little marketable fruit without irrigation. The yield of fruit in those two years was doubled, and the yield of marketable fruit increased 3 to 4 times as a result of irrigation. The average yield of marketable fruit over the five-year period has been increased at least 50 per cent. by irrigation. The market value of the fruit has been increased even more since larger size and better color under irrigation would demand a premium on the market as compared with non-irrigated fruit. With a soil that will apparently store less than 5 to 6 inches of available water and which is planted to long-season varieties, the possibilities of irrigation should be carefully investigated. With early varieties such as Yellow Transparent and Duchess, the benefits from irrigation have been much less since these varieties are usually harvested before the storage reserve of moisture is exhausted. The months of August and September are generally the ones in which moisture shortage is most acute, since by that time the storage reserve in the soil is likely to be exhausted.

The second factor in determining feasibility of irrigation is that of water supply. Large quantities of water are needed to irrigate an orchard. Unless a source of water is available which can be depended upon to supply large quantities of water even during drouth periods, installation of expensive irrigation equipment is questionable. The minimum amount of water that could be considered reasonably satisfactory to supplement rainfall under Middle Atlantic conditions, we believe, would be about two acre inches per month. This would not keep trees functioning at the optimum through prolonged periods when rainfall is almost totally lacking, but it would carry the trees fairly satisfactorily and in most seasons would supply adequate moisture to carry the crop through. Two acre inches of water is approximately 57,000 gallons. Thus to irrigate 100 acres, approximately six million gallons per month are required. This amount would represent 140 gallons per minute, 24 hours per day, and 30 days per month. Unless such quantities of water are dependably available, the installation of an irrigation system is questionable. It is unwise to install irrigation plants in small streams or other sources which are likely to provide little water under drouth conditions. The great quantities of water required preclude the possibilities of irrigation unless the orchards are fairly near large streams or lakes where the water supply is completely dependable.

There are, however, a number of places throughout the Middle Atlantic States where orchards are located near such dependable water sources and where conditions are such that irrigation would probably prove a very sound investment. It is difficult to place a definite figure on how much irrigation might be worth under any given set of conditions, since this of course will depend entirely upon what the rainfall conditions through the next 10 or 20 years will be. We can predict that only on the basis of what they have been during the past 10 or 20 years. In orchards that have suffered year after year at some time during the season because of moisture shortage, it would appear that an expenditure of $20 to $25 per acre per year for the application of water would be more than returned through the increased yield and the increased market value of the fruit.

In the absence of irrigation possibilities, every effort should be made to conserve the moisture that comes in the form of rainfall. Conservation of this moisture can be accomplished, first of all, through securing maximum penetration and minimum run-off. The handling of orchard lands to conserve moisture is a large subject which we will not attempt to cover in this discussion. The ideal soil management from this point of view is unquestionably the mulching of the trees with straw, corn fodder, or other organic material brought in from outside the orchard. Such a system secures practically 100 per cent. holding of the water that falls. Also if sufficiently heavy to keep down growth about the trees, it prevents growth of competing vegetation in the orchard, all of which uses moisture. Mowing of sod crops in the orchard is also a helpful practice from the standpoint of water conservation. The use of deep-rooted cover crops such as alfalfa or sweet clover on relatively shallow soils results in unusually severe competition during times of moisture shortage. Under such conditions the mowing of these crops is helpful. Cultivation conserves moisture through eliminating the competition with other crops, but a program for clean cultivation carried through many years is likely to lead to exhaustion of organic matter and severe erosion and run-off.

All of these problems of moisture supply become of decreasing importance as the water-holding capacity of the soil increases. The best method of handling the soil from the standpoint of moisture conservation, as well as from the standpoint of sound practices in maintaining organic matter, is one that merits careful study on the part of every orchardist to work out the best treatments for his particular conditions.

CORK INJURIES AND INTERNAL BREAKDOWN OF APPLES

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A discussion of cork injuries and internal breakdown of apples may logically follow a consideration of the possibilities of orchard irrigation because these physiological disturbances are more or less tied to the moisture supply of the tree.

There are several types of cork injuries manifested in somewhat different ways depending upon the particular combination of conditions or factors which are operative in their production. They are all classed as cork injuries, however, because they are exhibited by the presence of dry brownish masses of corky tissue variously located in the apple.

Drought Spot

This is the type of cork injury which occurs on trees in a normal state of growth as a result of acute and sudden drouth. It may occur at any time during the growing season but is most likely to be found after the fruit is half grown. It is manifested first by the appearance of water-soaked areas in the skin, usually about the size of a dime. These water-soaked spots are usually covered with a sticky sweet exudate which hardens like candy, but if the spot is cut into and tasted it will be found quite astringent or bitter.

The sweet exudate and the bitter taste afforded me some interesting and amusing experiences in connection with this trouble in the Pacific Northwest. I produced it experimentally for the first time and named it drouth spot in 1913 and later it was more or less commonly experienced in many commercial orchards due to failures in the supply of irrigation water. Fire blight is the great bugaboo of the orchardist in that region and affected trees are ruthlessly pruned or cut down and burned whenever symptoms of blight are found. Of course one of the characteristic symptoms of blight is the presence of a sweet sticky exudate on the affected parts so the sudden appearance of this condition on the fruit was immediately accepted by many growers as evidence of the dreaded infection. Axes and saws were brought into play immediately and a number of trees were cut down before I heard of the matter and could correct the error. The bitter taste of the affected spots was responsible for the only large scale bordeaux spraying ever done in the Wenatchee Valley to my gnowledge. The manager of a large orchard was a graduate of the State Agricultural College and of course has studied about bitter rot, but as it does not occur in the Pacific Northwest he had never seen it. However in the fear that his trees were showing bitter rot he sprayed the entire block with bordeaux.

At that time I had just concluded some irrigation experiments with trees on open gravelly soil where they responded quickly to soil moisture changes. In one of my plots the trees had been kept growing normally until about midseason when the water was suddenly withheld. The first reaction noticed was the production of the watersoaked areas on the fruit as described. This was eventually followed by wilting of the trees and some defoliation with the continuance of the drouth. However after water was again supplied the trees recovered satisfactorily and the fruit resumed growth—except for the areas that showed the watersoaked condition. The apple flesh grew all around these places which remained as flat, hard and sunken spots underlaid by a shallow layer of brown tissue that appeared at harvest like a bruise that had occurred early in the growth of the fruit. While such fruit probably never would be stored commercially we kept drouth spot apples to see how they would behave and found that they kept just about as well as normal fruit.

The interesting thing about drouth spot is the fact that it is an exhibition of the tendency of trees to draw on their fruit for moisture to maintain the foliage when sufficient soil moisture supply is not available.

Cork Spot

While sudden and severe drouth produces acute symptoms as described for drouth spot, chronic or long-continued drouth may produce another type of injury in the fruit which we call cork spot. In this case, however, instead of the manifestation being connected with the terminals of the water conducting vessels in the fruit it is found either around the core adjacent to the main vascular bundles when it is often called "corky core" or adjacent to the larger vasculars in the flesh of the apple when it is termed simply "cork spot." The spots themselves resemble bitter pit or "Baldwin spot" in general character but usually are larger, harder and darker in color, and when they occur in the flesh outward from the core line are usually accompanied by a malformation of the fruit so that its contour is uneven, flattened or depressed. With these apples the inception of the trouble may be noted by the appearance of a reddish stain on the surface which may become watersoaked with a sticky exudate as in the early stages of drouth spot. Sometimes, too, cork spot is accompanied by the occurrence of raised brown or reddish "welts" or blister like spots on the skin. As the apple develops these blisters crack and scale off leaving a rough corky area. This type of injury occurs very early in the spring usually before the deeper seated cork spot is evident. When the cork is confined to the core region the surface is not usually affected and the only detectable symptom of its presence without cutting the fruit is its premature coloring and ripening. In contrast to drouth spot, fruit affected with cork spot and especially corky core does not keep well.

It really should go to the cull pile or vinegar factory but I have known growers who have shipped such fruit to market.

This type of injury is most commonly found on either very shallow soils or very open porous soils which are excessively drained, and paradoxically may also occur on trees in water-logged soil. It occurs on both apples and pears and once the trees are affected it appears that there is established a marked tendency for the trouble to recur in succeeding years.

These troubles as well as all disorders having their inception in disturbances of soil moisture supply, either as a direct influence or indirectly through an effect upon nutritional processes, are most common in the irrigated orchards of the West but are found from time to time in the East. They have been reported by Mix of the New York Experiment Station from the Lake Champlain region of that State while we have seen them in the Shenandoah-Cumberland region. They have probably been studied most intensively by McLarty in British Columbia where they are among the most important causes of loss to the growers.

McLarty found the cork spot troubles to be associated with the production of abnormally long root hairs which easily succumb to adverse conditions, and that the tendency to produce this type of long root hairs seems to persist once it is established. In our own work in the Pacific Northwest we found that the prevalence and severity of cork spot could be cut down by building up the moisture holding capacity of the soil through addition of humus either from cover crops or otherwise, by fertilizing the trees to increase their vigor and consequently their resistance to drouth, and by continually supplying a sufficient amount of soil moisture through regular and frequent irrigation depending upon the character of the soil. Where the trouble is associated with water-logged soil or a high water-table the remedy of course is obvious and adequate drainage is called for.

Cork spot is also produced by faulty cultural methods—particularly deep plowing or cultivating which cuts off many feeder roots. I know of a Delicious orchard in the Pacific Northwest which was so good it sold for $1,000 an acre several years ago. It was a regular producer of heavy crops of high grade fruit. The new owner, however, had an idea that the alfalfa cover crop in this orchard ought to be turned under and accordingly plowed it deeply and disastrously, for thereafter it consistently produced upwards of 90 per cent. cork spot-affected fruit, and finally in disgust the owner pulled it out and replanted. Under the influence of the alfalfa cover crop which was long established the majority of the feeder roots in this orchard were very shallow so that they were largely destroyed by the deep plowing.

Other conditions which favor the development of cork spot are root winter killing or other types of root injury which accomplish results similar to those produced by the deep plowing. Sometimes these can be alleviated by good cultural conditions, by inarching young trees planted around the old one, or by bridge grafting. In many cases, however, it does not pay to bother with such trees and the most satisfactory way of dealing with them is pull them out and replant.

Crinkle

This is a type of cork spot which is exhibited usually as a crescent-shaped corky area on the blush side of the fruit, although sometimes the crescent shape is not well developed. It is most commonly found in the top and on the south side of the trees where the fruit is directly exposed to the sun but on the Northwestern Greening which appears to be exceptionally susceptible it may occur on any part of the tree whether exposed to the sun or not. There was a severe case of this at Snow Hill on the Eastern Shore a few years ago. In Australia where it appears to be fairly common it is regarded as "a confluent type of bitter pit." In this country it is especially prevalent on York Imperial and Northwestern Greening apples, and it is therefore fairly common in Maryland and adjoining States where these varieties are grown. It usually is found bordering the area of the fruit which receives the most direct rays of the sun, and appears to be due to direct heat injury. We have produced it experimentally by controlling the exposure of apples to sunlight and suddenly changing the position of the fruit to bring a new area into direct exposure. Apparently resistance to sunlight or to the heat of sunlight is normally developed in the growth of the fruit but if the intensity of the sunlight is suddenly increased on a given area of the fruit's surface the underlying flesh tissue is killed and becomes dry and corky, producing the injury which we may classify as "crinkle" or heat injury. Since its cause appears to be tied up with general varietal susceptibility and weather conditions no suggestions for prevention or control can be advanced. The keeping quality of affected fruits does not appear to be appreciably affected but the presence of the trouble generally places the affected fruit in the cull pile or in the lower grades which are not stored anyway.

Thus far we have been discussing troubles or diseases which are more or less directly drouth effects. Let us turn now to a consideration of the effects of an abundance of soil moisture or of other factors which induce excessive growth.

Internal Breakdown

This may be regarded as the exhibition of the end of the normal life of an apple in storage when fungous rots or excessive wilting are not involved. When it is picked from the tree an apple is a living, breathing organism with a certain potential storage life dependent largely upon (1) how it has been grown, and (2) on its storage temperature. In general we may say that its potential storage life depends mainly on how fast it breathes or respires in storage. In the process of respiration it consumes oxygen from the air and gives off CO_2, H_2O and heat derived from breaking down the contents of its own cells. Before harvest the same processes are operative but since the fruit is attached to the tree and is actively in a state of development losses are counterbalanced by growth and reserve materials in the form of sugars, starch, water, acids and other substances are stored in the fruit. The fruit may be considered as a storage reservoir of materials which it may use up in prolonging its own life after harvest. The rate at which it uses up these materials is largely controllable by the temperature of the storage and for every rise of 18° F. above 32° it approximately doubles.

In this particular discussion we must be concerned mainly with the factors which predispose the fruit to live its storage life quickly or prematurely resulting in the occurrence of what we call internal breakdown.

There are about as many types of physiological breakdown of apples as there are of cork spot—all influenced by varying factors and exhibited in slightly different ways but space will not permit a discussion of any except "internal breakdown."

When apples are produced on vigorously growing young trees or on very heavily pruned or heavily fertilized or heavily irrigated older trees, especially those with a light crop, they frequently are large, coarse textured, poorly colored and "punky." These and apples which are not picked until over-ripe or affected with watercore are the ones most susceptible to internal breakdown. This is exhibited by the browning of the flesh and the development of a soft mealy condition. In late storage of normal apples the same condition is often found around severe bruises because the bruising injury stimulates respiration and the localized speeding up of the life processes in this area. Susceptible apples ought never to be stored for extended periods but preferably should be marketed at time of harvest for they will reach the end of their storage life very quickly, especially if held in common storage. If such a crop must be held it should be placed at 30° to 32° as soon as possible, particularly the larger sizes, which are most susceptible.

With Grimes Golden apples there is another type of breakdown which should be mentioned briefly lest it be confused with that just discussed. It is called "soggy breakdown" because it is ordinarily more moist than internal breakdown. It is closely related to soft scald which frequently occurs on the Jonathan and Rome Beauty varieties. Ordinarily it can be controlled satisfactorily by storing the fruit at 30° to 32° within 24 hours after harvest but if this is impossible the fruit should be placed at a temperature of 36° to 38° as soon as practicable. The disease does not occur in common storage but use of this type of storage is of course inadvisable except for short periods, particularly for an early season variety like Grimes, but with any variety use of common storage undoubtedly increases the loss from internal breakdown.

ORGANIC MATTER IN BEARING ORCHARDS

By DR. J. H. GOURLEY
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No one can hope to stay in the fruit business for long if a rather high average yield per tree or per acre is not maintained. Under Ohio conditions we would figure 200 bushels per acre as the minimum yield for apples as an average and 250 bushels is more likely to be the base figure. As the yield goes up the cost of production comes down. It is difficult to cut most of the costs of production, but it is possible to influence this factor by increasing the yield. This statement must not be construed as advocating an increase in total production, but rather a limiting of acreage where over-production has occurred.

Increased production involves everything. First the site and soil, then variety, and lastly, all the cultural practices that are involved in production. No one factor can stand alone, but all are interrelated.

But the topic of this discussion is that of the value of organic matter in bearing orchards and should have our chief consideration. Ever since I have had any instruction in agricultural matters I have heard of the value of organic matter. It has taken on a certain mysticism in the minds of many and is surrounded by a halo. But if the scientific method has any value it is in the analysis of a situation and the reduction of it into its component parts.

Organic matter, in simple terms, is plant or animal material, and in its present usage refers to that which is incorporated with the soil mass. One of the outstanding contributions which is accredited to it is its ability to hold water in the soil, that is it "acts as a sponge." Another is the actual elements of fertility which it contains, while another is its effect in changing the mechanical condition of a soil.

But there is more than one school of thought in regard to this matter, for long-time experiments with farm crops have not borne out all of these contentions. For instance, the Ohio Agricultural Experiment Station shows that for an average of 17 years at least as great a value is obtained from the use of chemical fertilizer as from manure, each carrying approximately the same amount of nitrogen, phosphorus and potash. The following condensed table shows these results:

Treatment	Value of increase 17-year average
4 tons manure	$6.31
Equivalent in chemical fertilizer	7.43
4 tons manure plus 380 pounds superphosphate	12.39
Equivalent in chemicals	13.35

Similar results are reported from the Rothamsted Station in England after many years of experimental work. At the Marietta Truck Station in Ohio the net value of the crops of tomatoes, sweet corn and cabbage has been as great from chemical fertilizers as from manure. This has not been true with cucumbers. But more striking still is the fact that plants as woody as the tomato and chrysanthemum can be grown to perfect maturity in pure sand from which all organic matter is removed, provided complete nutrient solutions are added.

Such a contrary picture raises the question of the value of organic matter. And yet we know that great benefit has resulted where the green manuring system has been used in orchards, provided the green crop is adequate. And in spite of the above remarks the practice of growing cover crops in orchards is one of the best in modern use. The question may properly be raised, however, as to their specific effect.

It is evident to any experienced orchardist that a soil that is well supplied with organic matter as indicated by its dark color is much superior for orcharding to one that is naturally low in organic matter. The former type of soil, if it is relatively deep and allows the roots to penetrate to a depth of five to six feet, produces a large, productive and long-lived tree, while the gray, mottled soil that is low in organic matter results in a poor orchard. It is possible to maintain the organic matter in a good soil by judicious orchard practices, but it is almost impossible to build up a poor soil to equal the one that is naturally high in organic matter.

Since the elements of fertility can be supplied from a fertilizer bag at a relatively low cost, the next important factor is the matter of moisture. In this connection it is of interest to quote some results secured at the Federal Soil Erosion Experiment Station at Zanesville, Ohio, which were supplied by J. A. Gibbs. After a very protracted dry spell, lasting for months, there was a rain of 2.45 inches on August 2, 1934, and shortly after the rain observations were made as to the depth of penetration of the water as follows:

1. In bare washed soil, shale exposed:
    a. Near top of slope (5% slope)—1½ to 2 inches.
    b. Near bottom of slope (10% slope)—2 inches.
2. In timber plot with good cover (12% slope)—8 inches.
3. In meadow under slope (15% slope)—4-5 inches.
4. In blue-grass sod (very heavy sod cover—has been in grass approximately 20 years)—7 inches.
5. Corn, good stand, drilled, 8 inches tall:
    a. Between rows—2 inches.
    b. Close to plants—5 inches.
6. In wheat stubble (8% slope)—3-4 inches.

Here we see that bare soil permits little penetration of rain and a cover of any sort facilitates penetration.

If the cover crop be alfalfa or other legume it will add as much as 100 to 150 pounds of nitrogen per acre, which is equivalent to 500 to 700 pounds of ammonium sulphate. The effect of organic matter may be too slow to show up, but in the end most sorts have shown a benefit. In the West, where water was supplied freely by irrigation, but organic matter was lacking, the orchards declined. This was largely a matter of nitrogen and the mechanical condition of the soil.

The Mulch System

During the past five years the grass or straw mulch system of orcharding has become increasingly prominent. This has been due to the more favorable moisture situation beneath a mulch or compared with cultivated soil. Usually the mulch is not compared with a cultivated soil into which has been turned large amounts of organic matter, or the contrast would not be so great.

For instance, at Wooster, Ohio, the moisture was determined at a time in 1930 and again in 1934 when the soil was particularly dry. The following results were obtained:

Percentage of Moisture in Orchard Soils

	Grass mulch	Soy beans	Clean Cultivation	Sod
	1930			
Upper 6 inches	10.45	5.77	7.48	6.16
Second 6 inches	8.45	6.98	6.98	6.31
	1934			
Upper 6 inches	10.67	9.50	7.50	8.33
Second 6 inches	11.33	10.33	9.00	8.67

The color of the fruit has been better in the mulched plot each of the dry seasons. Under mulched trees 93 per cent. of the Delicious and 83.5 per cent. of the Stayman Winesap were above 33 per cent. fancy in color, while 88 per cent. of the Delicious and 59 per cent. of the Stayman in the cover crop plot showed 33 per cent. of color. This is probably due to the difference in moisture content of the soil. Size of fruit was likewise superior under the mulch and in about the same proportion as was color.

The yield of trees grown in mulch was lower for several years than a like block grown under tillage, but during the past few dry years the mulched block has practically equaled the tilled one and the trees are much superior in growth, color and general appearance.

The chief advantage of mulch is not that it adds organic matter to the soil, but rather that it results in a loose, friable soil, holds moisture because the penetration is better and loss of water by evaporation is at a minimum, and probably aeration of the soil is much better than in the compacted soils under other systems of culture.

Therefore, whatever system is used the goal is to maintain the moisture supply, avoid a compacted soil, secure good aeration and drainage, and the other factors can be supplied. Large amounts of organic matter plowed into the soil will do much to obtain this goal. The mulch system, where practicable, is also an important system for Eastern orchardists.

IMPORTANT PRACTICES IN PRODUCING A GOOD CROP OF PEACHES

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In a discussion of this subject it is desirable to go into the background of growth and production of peach trees in order to understand the justification for the practices which successful peach growers follow. Since the ultimate goal of the grower is the production of a crop of marketable fruit of good size and quality, most of the practices should have a bearing on that goal. Thus nearly all of the so-called cultural practices have a bearing on one another and are all more or less concerned with the growth and production of the tree. I shall attempt here to cover the more important practices and will take up in sequence the order in which they are usually followed by peach growers. It is to be understood, of course, that disease and insect control are equally important, but these problems will be discussed by others on this program.

Pruning

Much has been said about the importance of peach pruning, and most successful growers follow a pruning schedule for peaches which has become more or less standard in the different regions of the country. On the whole, I think we can say that pruning of peach trees is not quite as severe as was formerly practiced. Results from experimental studies, as well as the experience of growers, has suggested for young peach trees such severe heading back as was formerly practiced dwarfs the tree and delays the period of heavy fruit production. Pruning during the early years of the life of the tree should be concerned principally with shaping and training the tree to insure good spacing of branches as well as the development of scaffold branches of good diameter to hold up a heavy crop of fruit.

After peach trees come into bearing there is a noticeable slowing down of terminal growth. In order to keep the peach tree renewed with terminal as well as lateral shoot growth, pruning will be found a valuable and perhaps necessary orchard practice. The amount and degree of this pruning which any grower will follow will depend upon the age of the trees, the amount of growth which they are making, blossom bud mortality, the size of the crops, as well as the response in the particular environment following pruning.

If we may take, for example, an eight-year-old peach tree which has borne four successive crops, with a terminal growth of about six inches, and which has not been heavily pruned up to this time, we will find that it will respond to a moderately heavy pruning of the renewal type. This renewal pruning should be distributed over the tree, and will result in a general thinning out. In a tree of this kind it will be observed frequently that there are a number of branches through the tree which are making very slow growth and are not producing many peaches. The removal of this growth, as well as the shortening back of some of the terminals, will result in a response of new fruit-bearing wood throughout the tree. As the tree becomes older it will be found that a more severe pruning than this will be required to produce desirable shoot growth. Then it may be necessary to increase the severity of the pruning, cutting back into two- and three-year wood by removing entire branches three or four years of age. This should still be done by a thinning method rather than by a general heading back. Such rather severe pruning will be justified only after the production of several heavy crops, when there has been an accumulation of considerable wood in the trees and terminal growth is short, even though adequate fertilizers have been applied. This kind of renewal may be done advantageously in a year when all buds have been killed. For trees which are in good vigor, however, and which have had moderately heavy pruning annually during the crop years, there will be no need of heavier pruning in the off-year. Furthermore, trees which have not yet begun to occupy all of the space between tree rows, and are not very vigorous, will frequently be benefited more by applications of fertilizers rather than by pruning. Finally, as the trees slow up in growth, say at 15 or 18 years of age, even more severe pruning may be required to produce satisfactory fruiting wood. This heavier pruning will be justified, especially if the upper portions of the scaffold branches have been winter injured, with the result that the wood has been severely weakened. By heavy pruning I do not mean dehorning or such severe pruning as cutting back the scaffold branches to stubs. Pruning can be severe without destroying the framework of the tree. As a last resort, before pulling out the trees, a heavy pruning of this type will result in a response of the tree in satisfactory shoot growth to produce one or two crops of fruit. It is not implied, however, that trees which have been severely wintered injured, and which have been weakened, should be retained in the orchard. Under such conditions it may be more profitable to remove the trees and plant new ones in their places.

Aside from the stimulation of new wood growth, pruning may also serve as a method of thinning the fruits and thus supplement the thinning practice which is so necessary in the production of a good crop of peaches. This is especially important where there is little danger of loss of the crop by spring frosts or winter killing of the buds. In this manner a large number of potential fruits may be removed with one pruning cut rather than pulled off individually when the crop on the tree is thinned.

Fertilizers

There is considerable experimental evidence on the response of peach trees to the use of fertilizer. Most of this evidence points to the importance of nitrogen as the one element to which peach trees show the greatest response. In most parts of the Eastern United States, if nitrogen is withheld from bearing peach trees, in some cases even for a single year, the lack of this nitrogen will be apparent in the color of the foliage and the amount of terminal growth produced. As a result, it would be expected that peach trees should show a marked response to varying amounts of nitrogen. In some orchard regions, where peach trees are planted on a deep, well-drained and relatively fertile soil, two or three pounds per tree of some readily available nitrogen fertilizer will be sufficient to produce good growth and mature a crop of fruit. On other soils, it may be found that it will require four or five pounds, and even more, to obtain the same amount of growth.

The time when this fertilizer is applied is important. In some recent experiments which we have been conducting, we have found that nitrogen applied in the fall is taken into the roots and remains there until growth is resumed in the spring, when it is transported to the growing points in the top of the tree. Shoot growth starts off rapidly in the spring if there is a good reserve of nitrogen in the tissues of the tree. For trees that are low in vigor, this application of nitrogen should be put on either in the fall or early spring. If nitrogen is applied as late as full bloom, and especially if the trees are low in vigor, the response in growth and size of fruit will not be as great as if the fertilizer had been applied earlier. This is especially important with some of the more slowly available forms of nitrogen. With these, most of the terminal growth will be completed with the reserves which are in the tree, and before the nitrogen which has been applied is available for additional increase in growth, unless the application is large.

Another important factor to be considered is the possible effect of heavy late spring applications on color of the fruit. We do not have much experimental evidence on this point, but some evidence points to the fact that nitrogen which becomes available late in the season may affect the color and quality of the fruit. This is particularly true where the increased size and density of foliage results in shading the fruit.

Thinning

This brings us to the consideration of those factors affecting the size and quality of the fruit. One of the most important of these is thinning. What has already been said about pruning and fertilizers has a bearing on twig, leaf and fruit growth, and may also have a marked effect on the number of fruits set. It is known that peach fruits show a definite periodic development. If we were to plot the growth curve of the peach fruit throughout the season, it would be observed that the rate is fairly rapid from the time of fruit setting for a period of about a month. Then it slows up for about six weeks, after which another rapid increase in growth is noted in the final period prior to fruit harvest. The duration of the second period will depend somewhat upon variety. Early ripening varieties, of course, will not have quite such a long period of slow development. The important period, so far as the grower is concerned, is the last period, which is commonly spoken of as the "final swell." Many factors enter in, to determine whether the final swell will result in two-inch, two and one-quarter-inch, or two and one-half-inch peaches. If the number of leaves per fruit is not sufficiently large, the final size may be greatly reduced. Carefully controlled experiments have shown that fruits produced with 30 or 40 leaves per fruit will be very much larger than fruits produced with 10 leaves per fruit. The methods which the grower must use to regulate this fruit-leaf ratio will be those of increasing the size and the number of leaves. Here pruning and fertilizing, which have already been discussed, through stimulating growth, and increasing the foliage system, are important ways of accomplishing this. Thinning is perhaps the most satisfactory way of regulating the number of leaves per fruit on the tree after the crop is set.

Now when should this thinning be done? From evidence which we have obtained, we are inclined to think that the earlier it is done the better the result in final size of peaches. If we examine carefully the growth curve of the fruit which we have discussed, it will be observed that the thinning can be done any time during the second period of growth without greatly affecting the size of the fruit before it goes into the final swell, and will result in larger fruits than are obtained on the unthinned tree. Thinning even as late as the final swell will result in some increased size of fruit over unthinned trees. Of course the fruits on such trees would not be as large as if the thining had been done earlier.

Another important factor to be considered in connection with the effects of early or late thinning is the amount of bloom. When there is a heavy bloom, due either to favorable conditions for blossom bud formation or low winter bud mortality, there is a heavy drain on the food reserves of the tree during blossoming and fruit setting. If food reserves and nutrient supply are low at the beginning of the season, the leaf area produced on new shoots may be correspondingly limited. Under such conditions, we have observed that the fruits are not as large at the end of the first growth period on unthinned branches as on thinned branches. Furthermore, the fruits from the early thinned branches were larger at time of harvest than those from unthinned branches.

Thinning is also important in securing color and quality of fruits. Again we know from experiments that where the number of leaves per fruit is increased the fruit is not only of better size, but is of higher color and quality. Where peaches are grown with five to ten leaves per fruit, the fruits when harvested are not only small, but are rather insipid in flavor and of poor color. Where thirty or forty vigorous, healthy leaves per fruit are maintained, the peaches may be from two and a quarter to two and one-half inches in diameter and of good quality. With the large leaf-fruit ratio we find more sugar in the peaches, also more acid, but with the increase of sugar in relation to acid we get a more pleasing taste or, as we say, better flavor and quality.

Moisture

The importance of thinning in securing increased size of fruit may not be so apparent if the available moisture supplied to the tree is too low, particularly during the period of the final swell. If the tree is supplied with adequate moisture throughout the season, and if the ratio of leaves to fruit is large, so that there are no factors hindering leaf function, the final result would be fruits of good size and quality. However, it frequently happens in this part of the country that the moisture supply during late July and August, when the peaches are in the final swell, is inadequate for the needs of the tree. The result is that leaf function is interfered with and the fruits may slow up or stop growing entirely if the moisture shortage becomes very acute. Under such conditions as these, you may frequently find that the fruits from thinned trees are not much larger than those from unthinned trees. However, this does not in any way minimize the importance of thinning. In some sections where this conditions occurs it is frequently pointed to by growers as suggesting that thinning may not be so important in obtaining large fruits.

This logically brings us to a discussion of how we may influence the moisture supplied to the tree. In the irrigated sections of the West, peach growers are able to take care of this by irrigation. The possibilities of orchard irrigation under Eastern conditions has already been discussed on your program.

Cover Crops

We have under way some experiments studying the effect of various cover crops on the growth of peach trees. Naturally, a very important phase of this investigation is to find out how these various cover crops affect the moisture supply. We have noted that a deep-rooted cover crop, such as sweet clover, may greatly reduce the moisture in the first three feet of soil during periods of light rainfall. Where a winter cover crop has been turned under early in the spring and the soil has received summer cultivation without a cover crop, or where a slow-growing cover crop has been seeded, we have noted that the moisture supply during periods of stress has not been so seriously reduced. The ideal cover crop would be one that could be seeded in early summer and which would not make rapid growth until after the fruit had been harvested. We had hoped that crotalaria would answer this purpose for us for this region, but so far we have not had as satisfactory results from this cover crop as has been obtained in peach regions farther south. In years of average monthly rainfall, where there have been no protracted periods of dry weather in summer, we have found a combination of soybeans as a summer cover, followed by rye and vetch in the fall, quite satisfactory. Under such conditions, lespedeza may also be satisfactory, as well as the deeper-rooted plants like sweet clover.

It would seem from our knowledge of the importance of moisture in affecting the size of peaches that where a grower was using a summer cover that withdrew large amounts of moisture during the growing season that it would be desirable to check the growth of that plant either by mowing it or by disking it under before the soil became too dry. Then if light rains occur the trees will get the benefit of the added soil moisture and will not have to compete with the cover crop for moisture. It is questionable, however, whether a summer cover should be used in localities where summer droughts are frequent, unless the soils are of such a nature that they can store and hold a large amount of available water to take care of the demands of both the tree and cover crop for moisture during the dry periods. Where irrigation is a common practice, the competition with the growing cover crop is not so serious.

Regardless of the immediate effect of these covers in reducing the moisture supply, we know that they will add to the total organic matter content of the soil when disked under. There is an important added value of cover crops, aside from increasing the soil fertility, in checking soil erosion and allowing better water penetration into the soil.

OUR EXPERIENCES IN BUILDING SOIL ORGANIC MATTER AND PRODUCING GOOD CROPS OF PEACHES

By BYRON T. ROBERTS
Fruit Grower
Marlton, New Jersey

I feel as if I had been put on the spot in being placed on this program to speak on a subject that has been so well covered by Dr. Gourley and Dr. Cullinan.

When I talk about producing a good crop of peaches, I feel as if I were talking about ancient history, for it seems a long while since peaches have made us any money in New Jersey. This last season I did not pick a single peach on my own farm. In 1933 the storm of August 23rd came just the day we started to pick Elbertas; when the storm was over our crop was practically worthless. So to recall a good crop of peaches we have to think back a long time.

I think that our cultural methods in New Jersey are very similar to your methods here in Maryland. I will run through the season and tell you briefly of our practices. We are using the long system of pruning and try to take out the weak branches and the suckers and as much as possible, leaving those branches on the tree that are making the optimum amount of growth.

Our thinning job has been speeded up by a desire to reduce expenses. Many of us are using a short piece of hose or padded stick, which is used as a club in thinning the peaches. It has reduced the cost of thinning very much and a fairly satisfactory job can be done.

I use spray on my peaches entirely except for a dust just before picking. I feel that the cost is very much the same and the results favor the wet spray.

I think it is a very good idea to consider the subject of producing good crops of peaches, and building soil organic matter at the same time, because, I believe, it is impossible to produce good crops of peaches over a period of years without maintaining the supply of organic matter in the soil. I have tried it and proved to my own satisfaction that it cannot be done.

I think that I can convey my opinion of the value of organic matter in the peach orchard by giving you a life history of one of my peach orchards.

I helped set an orchard in 1912 with the trees planted eighteen by twenty. The production record of this orchard shows it reached its maximum at ten years of age and then quickly dropped 50 per cent. and stayed there for the rest of its life. As I look back at the cultural treatment of this orchard it was about like this. It was always cultivated during the summer with a cover crop sown in the fall. For the first seven or eight years there were some wonderful crops of crimson clover. Then the trees began to crowd and the cover crops did not do very well. For a year or so the peach crops kept up until at ten years old they produced their maximum crop.

During the next ten years the cover crop was always planted, but the trees did not do very well. When the ground got too sour to use crimson clover, rye was used. The oriental peach moth came along and we were advised to cultivate early to kill the over wintering pupae on the ground. Under this treatment the cover crop became less and less; with the peach crops suffering in size, quality and finish. It is a sad story but I hope that I have learned my lesson. If I had taken out half of the trees when they were ten years old, limed the ground and continued to get the good clover cover crops I secured in the early life of the orchard, I believe I would have been a lot better off.

In the new orchards I am planting now I am planting the trees further apart, namely twenty by twenty-five. I am not raising any truck crops between the trees but am bending every effort to put a lot of humus in the soil as a reserve to fall back on later. I am using sweet clover in the middles and am cultivating the tree rows with a one-horse cultivator. When the trees get too old to cultivate around trees, I expect to try the annual seeding of sweet clover during May and early June. When the time comes that the trees in these new orchards begin to crowd each other and shade out the cover crops, I hope I have the courage to take out half the trees and keep the humus supply up.

SPRAY CALENDAR FOR 1935

By DR. ERNEST N. CORY
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Every effort has been made to make the 1935 spray program as efficient as possible. To this end those associated with me from the Horiticultural Department and the Pathology Department have bent their energies. The program has been worked out in consonance with the data presented at the Cumberland-Shenandoah Apple Conference because we want our program to meet the needs of that portion of our clientele that has orchards in other States as well as in Maryland. This program, however, cannot be of maximum value to a grower unless each orchard is considered as an individual unit presenting a separate problem. In addition, the program must be intelligently supervised. As in the past years, we will have emergence cages for the codling moth and will attempt to give the growers special service in regard to timing for this insect and for the control of scab.

There are several matters that have come to my attention that I would like to discuss rather than go to into a detailed discussion of the program itself. The two extension workers, Messrs. Graham and Crothwait report that there is a considerable amount of scale in peach orchards, due possibly to lack of spraying in the orchards owing to the light or absent crop of last year. This situation will have to be met with thorough spraying with either lime sulphur or a 3 per cent. oil. It has also come to my attention that there is a considerable amount of red mite in various orchards. This may be due to several factors. If tar oils were used while the trees were entirely dormant, the probability is that the red mite embryos had not developed sufficiently within the egg before the application, to enable the tar oils to give a good kill. In our experimental work on red mite, it was definitely shown that early applications were not as efficient as applications about the delayed dormant period because the embryos do not begin to develop until that time and until embryonic development begins, the chorion around the egg seems to be impervious to sprays. Another possible reason for an increase is the general tendency to utilize bordeaux sprays after the second cover and these sprays have no effect on the summer crop of mites. Under the old scheme when we used lime sulphur throughout the season the bronzing of the foliage by the summer crop of the mites seldom materalized.

The rosy aphis situation was fully discussed by Dr. Porter last night and in supplementing what he had to say, I believe that the paragraph that we have in the spray schedule relating to the rosy aphis will give you our best judgment in respect to this situation.

"The injury from this insect was not nearly so pronounced in 1934 as in 1933; but past experience indicates that when the migrants are plentiful, as they were this past fall, it is wise to utilize available control measures as insurance against injury from this pest."

The codling moth remains the most serious problem confronting our growers. In spite of a vast amount of experimental work during the past few years, no substitute for arsenate of lead has been found that we can recommend. Accordingly, we are offering the growers two separate programs, one consisting of arsenate of lead throughout for those growers that are equipped to *wash* their fruit and the other with calcium arsenate after the second cover spray. Growers have come to the point where there are just two alternatives; one, the continuation of a relatively inficient program which will ultimately lead to a large increase in the population of the codling moth and severe financial loss, the other, the thorough and timely spraying with arsenate of lead followed by washing the fruit to remove the excess residue. The public has come almost to the point of demanding washed fruit regardless of the spray program and, therefore, it seems to me that the time is at hand when every grower who can possibly purchase washing equipment should do so if he expects to continue in the fruit game. Some favorable results have been obtained in other States with calcium arsenate and it may be that when a proper method of producing calcium arsenate of known composition and stable qualities is worked out, that this material will find a place in the program. Fluorine compounds have given some satisfactory results but do not meet the residue requirements. Summer oil likewise has been helpful in spray programs, but usually necessitates washing as part of the orchard practice.

Leaving out of consideration stationary spray plants, the problem of *thorough* spraying is still with us. In general, an orchard should have at least one sprayer for every forty acres or else night spraying should be used as a supplement to the day spraying in order to get over the orchard in the time limit set for each spray. A thorough job of spraying means covering *all* portions of the trees, especially the *insides* and the *tops*. Orchard owners must give more consideration to supervision of their spray operations. In general, spraying receives *less actual supervision* than many other operations, except in an effort to speed up the work and *speed* will *not* take the place of *thoroughness*. Those of you who have large trees will have to put towers on the spray tanks in order to reach the tops and will have to pause beside each tree long enough to get complete coverage.

Orchard sanitation is a necessary adjunct to controlling the codling moth. Scraping and banding have been more general during the past year than heretofore and other sanitary measures such as the removal of dead and dying limbs of trees, proper pruning, clean-up of debris in the orchard and around the packing shed and the holding of picking equipment in tight storage until the middle of July, are necessary if maximum results are to be obtained.

A survey of Maryland orchards indicated some very favorable results as well as some decidedly serious infestations. In general, the condition in Maryland orchards is not bad as will be revealed by examination of the appended figures, but in those orchards that show a considerable amount of insect injury much more thorough spraying with arsenate of lead, coupled with washing of the fruit will be necessary if the infestation is to be cut down to a point where a profitable crop can be grown.

CODLING MOTH SURVEY IN WESTERN MARYLAND FOR 1934

Orchard Number	Variety	Per Cent. Worms	Per Cent. Stings	Per Cent. of Other Insect Injury	Total Insect Injury	Other Diseases	Per Cent. Scab	Total Disease Injury	Per Cent. Fruit Free From Insect Injury	Total Per Cent. Clean Fruit
I.	Delicious	17	4.7	0.07	21.77	23	0	23	78.23	55.23
II.	Delicious	12	5	0	17.00	1	0	1	83.	82
	York	4.6	9.2	0	13.80	0	0	0	86.20	86.20
	Winesap	5.6	3.5	0	9.10	.07	0	0.07	90.90	90.83
III.	Delicious	0	5.3	0	5.30	5.3	0	5.3	94.70	89.40
	Grimes	1.6	5.3	0	6.90	0	0	0	93.10	93.10
	York	0	8.9	0	8.90	0	2.3	2.3	91.10	88.80
IV.	Rome	3.8	0.9	0	4.70	0	0	0	95.30	95.30
	Stayman	3.5	2.2	0.6	6.30	1.6	0	1.6	93.70	92.10
V.	Stayman	0.9	0.49	0	1.39	0	0	0	98.61	98.61
VI.	Delicious	5.5	4.1	1.9	11.50	15.5	0	15.5	88.50	73.00
	Gano	11.1	5.2	0	16.30	1.6	0	1.6	83.70	82.10
VII.	Grimes	4.3	4.4	0	8.70	0	0	0	91.30	91.30
	Winesap	6.7	9.4	0	16.10	4.7	0	4.7	83.90	79.20
VIII.	York	4.5	4.5	0	9.00	1.6	0	1.6	91.	89.40
IX.	Rome	7.2	4.7	0	11.90	0	1.0	1.0	88.10	87.10
X.	York	4.8	9.1	0	13.90	2.5	3.1	5.6	86.10	80.50
XI.	York	0.3	4.8	9.5	14.60	4.8	1.2	6.0	85.40	79.40
XII.	York	5.4	23.5	1.9	30.80	2.1	2.6	4.7	76.50	71.80
XIII.	York	0.8	3.6	14.2	18.60	3.6	2.2	5.8	81.40	75.60
XIV.	Stayman	7.2	23.90	0.6	31.70	0.8	0	0.8	68.30	67.50
XV.	Black twig	14.5	19.60	4.3	38.40	6.0	0	6	61.60	55.60
	Stayman	7.0	8.60	0	15.60	1.0	0	1	84.40	83.40
XVI.	York	11.1	13.50	1.33	25.93	2.9	0.33	3.23	74.07	70.74
XVII.	Stayman	4.7	4.50	0.70	9.90	0.7	0	0.7	90.10	89.40
	Black twig	20.0	17.00	0	37.00	0.7	0	0.7	63.00	62.30
XVIII.	York	4.3	3.4	33.0	40.70	0.3	0	0.3	59.30	59.00
	Averages.........	6.2	7.86	2.53	16.23	2.91	0.47	3.07	83.77	80.70

CODLING MOTH SURVEY ON EASTERN SHORE FOR 1934

Orchard Number	Per Cent. Worms	Stings Per Cent.	Per Cent. of Other Insect Injury	Total Insect Injury	Per Cent. Scab	Other Diseases	Total Disease Injury	Per Cent. Fruit Free From Insect Injury	Total Per Cent. Clean Fruit
I.	16.77	30.70	3.3	50.77	8.6	2.50	11.10	85.00	73.90
II.	0.60	0.80	3.0	4.40	32.5	2.87	35.37	49.23	13.86
III.	2.40	2.20	18.7	23.30	2.2	1.10	3.30	95.60	92.30
IV.	6.7	47.10	3.1	56.90	16.2	1.30	17.50	76.70	59.20
V.	8.1	11.50	0.5	20.10	17.0	0.70	17.70	43.10	25.40
VI.	5.5	5.30	6.4	17.20	4.40	7.10	11.50	79.90	68.40
VII.	2.8	5.70	6.5	15.00	2.2	13.10	15.30	82.60	69.70
Averages	6.12	14.75	5.90	26.81	11.9	5.90	14.50	73.20	57.96

CARE IN THE HARVESTING AND PACKING OF FRUIT

By C. E. BRYAN
Fruit Grower
Havre de Grace, Maryland

In asking me to say something today, your Secretary wrote: "It seems that the care of fruit at harvesting and packing time is of much more importance than growers realize."

I think he is right, and that must be my excuse for saying a lot of things which may seem stale, and self-evident.

At a time when people generally have gone nuts on fancy packages, and doll up everything in cellophane to look its best, our fruit growers are often allowing their product to look its worst, through careless picking and handling, and sloppy grading and packing.

It is now generally recognized, or should be, that it is pure folly to produce low-grade fruit. Assuming that we have done a good production job, involving a maximum of expense and effort, how silly to lower the intrinsic, as well as the market value of our product, just for lack of proper care in harvesting and packing.

A good many of our harvesting and marketing costs are more or less fixed for us. The cost of packing material, transportation, brokerage, etc., is beyond our control. About the only variables are the cost of labor and the efficiency of management. Moreover, a good part of the cost of labor is inevitable. We save only a fraction of the labor costs by doing a careless job. The point I am trying to make is that the difference in money cost between doing a good job and doing a sloppy job is a relatively small item, when compared with the increase in selling price, and the investment value of your brand or mark.

My own costs are generally considered too high. This season they ran 17 cents per packed bushel, including all labor expense from tree to car. I dare say this is 50 per cent. higher than some costs, but I am confident that the few cents additional sold my apples for me at a profit.

Now, let's touch lightly on some details.

Especially in the case of apples of the finer varieties, so much bruising may occur in picking that no amount of care afterwards can make up for it. With the ordinary picking bag, even a careful picker is apt to bruise a good many apples. The best insurance against picking bruises I know of is the Wells and Wade picking bucket. For hauling in apples, I use extra heavy 20-quart hampers, as I think they have many advantages over field crates or boxes.

In picking peaches, I have found the 16-quart basket, with picking strap, the best bet.

I doubt if a really satisfactory job of picking can be done on a price-per-bushel basis. When it comes to "spot picking," of course this is self-evident.

In the case of peaches, quality depends very largely on picking at just the right time. This means going over the trees every other day, and involves perhaps the most difficult job we ask our labor to do. You can't expect that kind of work on a piece basis. Be that as it may, having produced fine, clean fruit, the next step is to get it into the packing house without injury.

Having got our fruit free from bruises into the packing house, it is axiomatic that every effort should be made to prevent injury to it, not only by design and construction of mechanical equipment, but also in training of labor.

Almost equal in importance to production of fine fruit on the trees is the matter of exact grading in the packing house. Every bushel should be packed as if that particular bushel were likely to be dumped and examined by a prospective purchaser. A few errors will be made under the best conditions, but your tolerance should be set at the lowest practicable point. It would be hard to over-estimate the value to a grower of a reputation for grading with meticulous care and absolute integrity. His fruit will not only bring a higher price, but will sell f. o. b. at harvest time.

In our section, generally speaking, the tub bushel is practcally a standardized package for apples, and of all the tubs, I have found the so-called E-Z Pak type best for fine apples. It permits a much evener and tighter pack.

Coming to peaches, the wonder to me is why the demand for peaches keeps up as well as it does, considering the condition in which most of them reach the consumer. It says a lot for the "hold" the mere idea of a peach still has on the average person. A perfect peach is probably the most delicious, luscious thing grown in the temperate zone. But how far from that ideal is the peach of commerce.

As I have already said, an essential factor in marketing peaches of high quality is to pick them at the right time—and there is only one day right for each peach. A peach "firm ripe" will really ripen after shipment with practically the flavor and juiciness of tree-ripened fruit, but a peach not fully mature when picked will never have the proper flavor or juiciness.

For peaches, I am dead against bushel baskets. If well-packed, they look well enough when shipped, but by the time they are put on sale by the retailer most of the fruit is a sorry sight. There is too much weight of fruit in one mass when it becomes soft enough to use. Half bushels are somewhat better, but seem to me too high in cost.

The best packages I have found are the 6-basket Georgia Carrier, and the flat or lug for very large fruit. In each of these the fruit is nested, making possible a reasonably tight pack without crushing. The cup or "till" allows the fruit to be retailed as it was packed, and thus conforms to the present-day tendency to package nearly all food stuffs.

Perhaps the greatest objection to this style of package is the necessity for skilled packers, which are hard to get and expensive. An answer to this objection may be found in the so-called refrigerator crate, in which each peach is placed in an individual straw board cell. This allows ordinary labor to be used, and certainly carries the peach in the safest possible way. Some markets, I know, have swung away from the crate to the bushel basket, but in the best Eastern markets really fine, honestly packed peaches still bring a premium in carriers, and the peck saved in each bushel pays the extra expense.

Peaches should certainly be shipped under refrigeration, except by truck to nearby markets, for immediate consumption, and it goes without saying that the careful shipper will have his peaches on ice within an hour or two after picking.

In the case of early apples, also, the fruit should be under refrigeration as quickly as possible after picking, unless trucked to nearby points for prompt sale. It should be remembered that 24 hours of high temperature will do more damage to a closed package of fruit than a week in an open basket.

I could keep you here for an hour or two, speaking of various details as they occur to me, without knowing which would be of interest to you. It seemed better briefly to suggest the main topics, hoping in that way to bring to your mind something you would like to hear discussed more fully. I hope some of you will start something.

In the discussion following Mr. Bryan's paper the speaker stated that a packer could pack 200 bushels a day, at a cost of about 17 cents a packed bushel, labor costs, only, included. The field costs were slightly over 9 cents and packing-house costs were slightly over 7 cents. In packing peaches in Georgia carriers 10 packers packed two cars a day. In all packing the color was held as high above the U. S. grade requirements as possible. In all picking and packing operations each man was held responsible for any equipment loaned to him. Usually such equipment was numbered and assigned to the men by number.

The five-eighths baskets used in picking peaches last about five to six years. They are hauled from the field in trucks equipped with racks, the baskets being placed in staggered stacks in the packing house.

All packing is closely supervised both in field and packing house. Apples are run into baskets from the table, through canvas tubes, to reduce bruising. A tight pack is essential and occasional baskets are opened to check up on pack, bruising, etc.

Usually three pickings are made in apples and four to five pickings of peaches.

NEWER METHODS AND MATERIALS FOR CONTROLLING CODLING MOTH

By EDWIN GOULD
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Kearneysville, W. Va.*

This topic is somewhat misleading since, in so far as I know, there are no significant new materials or new methods for controlling codling moth. Our present recommendations for securing better control of the codling moth consist of a more thorough application of the already recognized measures. Each orchard presents an individual problem, and the control expenditures must be determined by the amount of damage done by the codling moth. For many years the codling moth has been successfully controlled with a limited amount of spraying with arsenate of lead.

The recent notable increase in codling moth populations is due to a number of factors, among which probably the most important has been weather conditions unusually favorable to the insect. The omission of second brood sprays, due to the spray residue limitations, has also been a very important factor in the increased codling moth population. Under-equipment, improper timing of spray applications and ineffective application of the spray are among the contributing factors to this increase in population. The common practice of discontinuing the spray program after a destructive hail, and the problem of spraying interplanted orchard, especially where early and rapid-growing varieties are interplanted with slow-growing late varieties, have no doubt played a part in the increasing losses by the codling moth. Finally, we have the problem of the abandoned orchard which acts as a breeding ground and center of spread of this destructive insect.

This serious situation, together with the spray residue difficulties, is stimulating vigorous research efforts and lends hope that cheaper and more effective control measures will ultimately be evolved, although at the present we have nothing new to offer. The main research efforts throughout the codling moth infested areas of the United States are not only to find a substitute for arsenate of lead, but to find a more effective material. The ideal material would be one which would give more effective control and still not be injurious to the fruit or leave an objectionable residue at harvest time. Most of the work is being done along two different lines—to find an inorganic material or combination which is comparable to or more effective than arsenate of lead; the other, organic materials which will give satisfactory control without leaving objectionable residues at harvest time. The latter gives promise of containing the most desirable material. Nicotine, pyrethrum and rotenone are among some of the most important of the organic materials which have been tested rather thoroughly. They contain principles which have a very important physical and physiological effect on animals. The plant cells containing these compounds are broken and the material is extracted and combined in the forms in which they are commonly used, or they may be used in the form of ground root or other plant part. Due to the fact that the organic compounds contained in these plants break down and lose their toxicity within a few days after being applied, it is necessary to make frequent applications to effect satisfactory control. The cost of these materials, especially for such frequent applications, is so high that they cannot be used economically as a codling moth control measure until some method is found of combining them with some material which will aid in retaining their toxicity over a longer period.

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There seems to be two possible ways out of the spray residue difficulties—either by controlling the codling moth with arsenate of lead or other effective poisons and then removing the excess residue at harvest time, or by developing means of controlling the codling moth by methods which do not result in objectionable residues at harvest time. In the absence of satisfactory, effective and unobjectionable substitute materials it has been necessary to use the materials which leave an objectionable residue and then remove the excess by washing.

Spraying with lead arsenate is still the most economical and effective codling moth control measure now used. The effectiveness of arsenate of lead can be increased by the use of oil at a concentration great enough to serve as a destroyer of codling moth eggs as well as a spreader and a sticker; even the oil and stickers cannot be used with arsenate of lead in the late summer sprays without increasing the residue removal problem.

The necessity of washing to remove the excess residue is no longer questionable, except in a few of the mountainous sections and in certain other sections where codling moth is almost completely ignored in the spray schedule. In such localities it may be possible to control the worms satisfactorily with some of the less effective non-lead arsenicals in the later cover spray of sprays. With present restrictions it is possible to use arsenate of lead in the petal-fall and first cover spray and some non-lead arsenical in the second and third cover sprays without danger of excess resideue on late varieties at harvest time providing the third cover spray is not applied later than the early part of July. Oils cannot be used in these sprays without danger of excess residue at harvest time. A schedule of this kind will not give satisfactory control where there is a dense population of codling moth; however, at the present it is the only practice we have to offer those who cannot secure facilities to wash their fruit to remove the excess residue. Since none of the hundreds of materials now being tested throughout the apple growing sections of the United States give promise as an immediate substitute for arsenate of lead, it is obviously necessary for all growers in the codling moth infested areas to prepare to wash their fruit. The sooner washing facilities are secured, the more economical it will be for the growers. Delay in installing washing equipment, and the consequent shortening of the spray program, is a most favorable practice for the building up of dense codling moth populations, which are very difficult to control.

Thorough and timely application of sprays is probably the most important practice to need more careful attention. Practically all orchards are under-equipped and sprays are not applied at the time when they are most effective. Poor spraying and untimely spraying, due to lack of adequate equipment, results in more wormy fruits than all other poor orchard practices combined. The orchard continues to grow, but the equipment does not increase in proportion. In many orchards it is almost impossible to do a thorough job of spraying even with the best equipment. No material will give satisfactory control unless it is thoroughly and timely applied.

There are a number of comparatively inexpensive supplementary measures and other methods of reducing the codling moth population which can very profitably be used as a supplement to control by spraying. Most of these measures can be applied during the winter season when more time and labor are available. The extent to which these various supplementary measures can economically be used is an individual orchard problem and must be determined by the amount of damages done by the codling moth.

The use of chemically-treated bands has been found to be very profitable and ranks second only to spraying as a codling moth control measure. If they are to be fully effective, it is essential to scrape the trees thoroughly to remove all rough bark. It is very gratifying to note the extensive use of chemically-treated bands in the Shenandoah section during the past season. Banding of various types has been used as a codling moth control measure for many years, but it is only within recent years that the more satisfactory lethal band has been developed. The present commercial chemically-treated bands are not giving entirely satisfactory results, but their value cannot be questioned when it is shown that they will catch and destroy as high as 50 per cent. of all the worms when properly used. Orchard sanitation is very important in destroying hibernating quarters of the larva and adds to the effectiveness of bands, but this is overlooked by many growers. Large numbers of codling moth larva over-winter in rough trash, dead limbs, old props, coarse weed stems and similar matter; the destruction of which would greatly reduce the number of worms surviving the winter. The destruction of any hibernating places for the larva greatly increases the effectiveness of the bands.

Another important supplementary measure and one of interest at the present time is the packing-house sanitation. It is common knowledge among fruit growers that more wormy apples are found around the packing shed than elsewhere in the orchard. Practically every packing house is a center of infestation and a serious source of spread for the rest of the orchard. This concentration of worms about the packing shed is due, in part, to ineffective, untimely spraying, but mainly to the large number of worms carried into the shed in the cull fruit and permitted to escape. The culls are brought into the packing house and, while these infested apples are awaiting disposal, the worms emerge from the apples and seek secure, well-protected places to spin their cocoons. Many of them enter cracks in the floor and in the walls, as well as the picking and packing containers and many similar places. Normally the worms which spin up in these places are much better protected from natural enemies and adverse weather conditions, and a much greater proportion survive the winter than those over-wintering outside. Since the moth emergence from the worms over-wintering in the packing house may be one to three weeks later in reaching a peak in other parts of the orchard it presents a difficult spray control problem. This subjects the area around the building to a heavy, long period of moth emergence and egg laying. This situation can be cared for in part by applying several extra first brood sprays on these trees surrounding the packing house, but the most logical and satisfactory method of reducing the worm population is to eliminate the source.

Many packing houses could, with a comparatively small expenditure, be made tight enough to prevent the escape of the moths when they emerge in the spring. They should be sealed as tightly as possible with screen or a cheap grade of cloth, and all picking and packing containers stored inside. It is desirable to have a few tightly screened windows to which the moths are attracted when they emerge. By flying against the screens they will soon destroy themselves instead of hunting cracks through which to escape. Where possible the building should be kept closed until mid-summer since emergence in such places continues over a long period of time.

Unfortunately many packing sheds are so open they cannot be sealed and screened tightly enough to prevent the escape of the emerging moths. In such cases a great number of worms may be trapped by the use of corrugated, burlap or chemicaly treated bands placed along the edge of the floor and on the wall during the packing season. If untreated bands are used they should be removed at ten-day intervals from mid-June to early September and all the worms destroyed. They should be given a final examination when the harvest is over, after no more worms are leaving the fruit. Buildings should be cleaned up thoroughly after the packing season is over—removing, as nearly as possible, all hibernating places of the worms. All picking and packing containers should be stored in a tightly sealed building or removed from the orchard. Lug boxes, picking barrels or any other such containers stored in an open shed, as well as the shed itself, are a fruitful source of infestation for the rest of the orchard. Packing sheds should not be built in the orchard where other sites are possible.

There are a number of other supplementary measures which can be practiced with very satisfactory and economical results. The per cent. of wormy fruit is always less in the years of heavy crops, but the actual money loss may be much greater. During a light crop year special attention should be given to codling moth control; the entire crop should either be picked and destroyed early or special attention should be given to controling the pest by thorough spraying. Thinning during years of heavy fruit set is a valuable practice. It not only removes wormy fruit, but also breaks up the clusters in certain varieties, thus permitting a better application of spray materials. It is very essential that all wormy fruits, either windfalls or thinning, be destroyed or removed from the orchard. Heavy pruning opens the trees and affords a better opportunity for effective spraying, especially on the inside and the top of the tree where the bulk of the worm carry-over is found. Unless better control of codling moth is effected it is apparent that, with the present low apple prices and increasing cost of production, a large number of marginal orchards will have to be abandoned.

In the discussion Mr. Gould reported that there was likely to be a slightly larger number of over-wintering codling moth under mulched trees, but this was not a serious factor, as there were probably more on the tree, in broken limbs, scars, etc. He urged removal of tree props following harvest, and also prompt removal and destruction of all brush, trash, culls and drops in heavily infested orchards.

OUR EXPERIENCES IN CONTROL OF CODLING MOTH AND OUR METHODS IN THE HARVESTING AND PACKING OF FRUIT

By BYRON T. ROBERTS
Fruit Grower
Marlton, New Jersey

The codling moth has been getting to be more serious as our trees get older. It seems to me the method used ten years ago to get good fruit would not answer the purpose today. I feel that the main difference is that our trees are older and the codling moth population has been building up over a period of years. Our trees have more rough bark for the larvae to hide under in the winter time, however, I think that the main difference is, that during the last ten years the bearing surface of our trees has increased much more than we realize. The same pressure and the same methods that were satisfactory then, will not pass today in trying to spray thoroughly this increased bearing surface. Let us think for a minute just how fast the bearing surface of a tree does develop. When you double the diameter of a pipe you increase its water carrying capacity four times. Therefore when a tree doubles its diameter the bearing surface around the bottom would be increased four times. A tree also grows in height and as the upper limbs of a tree, say those over fifteen feet high are twice as hard to spray, take about twice as much material in relation to the bearing surface as those limbs near the ground. I think that I would be safe in saying that when a tree doubles its diameter its bearing surface is increased about seven or eight times and the amount of spray material needed to do a satisfactory job has increased nine or ten times.

The question of method of spraying is very important. One very interesting result turned up in an experiment by Dr. Driggers, who tried out the effectiveness of various spray mixtures on my trees. He has been working on the same block of trees for three seasons. During this test the sprayer, the pressure, the amount of material per tree, and the men doing the work have been the same. The codling moth count for the main blocks the first year was 25 per cent., the second year 50 per cent., the third year 8 per cent. There was only one change this last year and that was in the method of spraying. We used the old-fashioned single nozzle gun instead of four nozzle guns which were used the first two years. We were able to do a much better job in the tops of the trees with this old gun and there is where I think we had been falling down. My plan for this next year is to make an extra hard drive on the first brood. They seem easier to kill. The codling moth eggs of the first brood are not all laid on the apple. The little worm when he hatches must crawl around to find an apple; then we have an excellent opportunity to feed him arsenate of lead. At any rate it seems a lot easier to kill the first brood.

My plan of action for this next year is to use lots of material on the first brood, trying to get a thorough coverage of the whole tree. I can cover my orchards where I have stationary spray plants in four days. That would leave four or five working days before the next spray. I expect to take a portable sprayer and drive by the trees and have one man spray the tops from the top of the tank. If the wind is south when the main spray job is done, I shall try to spray the north side on this second trip. I hope in this way to reduce the population of codling moth for the second brood to such an extent that one, or, maybe, two sprays for the second brood will be enough. This past year I got through with two sprays for the second brood and had very little codling moth entry. This makes the residue removal job comparatively easy. Washing will be necessary but heating the water and using Vatsol can be dispensed with.

As for the material to be used I expect to use two sprays of summer oil for the first brood, and then lead, lime, and sticker for the second brood. When we use the best method of spraying to suit our individual job and use the most effective material we can get, we still have a very important factor to consider, namely the correct timing of our sprays. Here is where our Extension Service is helping us a great deal. In addition to our spray card service, we have an orchard meeting with the Extension specialist in fruit growing every week. At this meeting, the codling moth emergence records, the bait pan records, and the thinning records are given to us, and from this information the spray schedule for the following week is worked out. After receiving all this help it is certainly our own fault if we do not get the spray on at the proper time.

The codling moth is a very serious pest for the fruit grower. In some localities has gotten out of hand and made the profitable production of apples practically impossible. But I think you will find, that right in those same neighborhoods, there will be some growers who have been doing a consistently good spray job, and are securing very satisfactory control. This seems to me to be rather conclusive proof that the control of codling moth depends a lot more on the grower than it does on the locality in which he lives.

The question of the harvesting and packing of fruit has been very ably presented by Mr. Bryan. I will just mention a few of our methods in New Jersey where they vary somewhat from his procedure.

My pickers use picking straps and pick directly into a five-eight bushel basket. This combination is a little awkward to use on a ladder, but I feel that I can eliminate one handling of the fruit in this way, and prevent a lot of bruising. I do not ordinarily use tickets for the pickers except when we are having difficulty with bruising; then for a while we use tickets. The pickers do not like them, and it makes rather effective punishment. I haul the fruit to the packing house, on a flat truck. When we have a long haul we stack the baskets on the truck, setting one basket on four. In this way we can handle about two hundred and fifty baskets very satisfactorily, provided the baskets are properly filled. We do not fill the baskets above the rim; then we can stack them without having to move any apples.

In the packing house I use a Cutler Moe washer and a Wayland sizer and have found them both very satisfactory. There are no features of my packing house operation that are different from the usual practice.

HOW TO AVOID DAMAGE TO APPLES IN THE WASHING PROCESS

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In washing apples for the removal of spray residue there are a few points which must be kept especially in mind in order to avoid damage to the fruit. In the first place the apples must be very carefully handled to prevent mechanical injuries from which storage rots will start. Careful handling to avoid stem punctures and bruising is highly important and failure to observe necessary precautions in this connection has been responsible for most of the complaints about the poor keeping quality of washed fruit. When washed apples rot in storage it is almost invariably due to careless handling during picking or subsequent thereto.

In observing the washing operations in many Eastern packing houses during the past fall I have frequently seen the apples poured into the washing machine very roughly with no attempt whatever to break their fall or to keep them from piling up. In many cases, too, the machinery was not adjusted properly to reduce the chances of mechanical injuries and apples were cut, bruised or punctured in their passage through the packing house. With such conditions prevailing it is not surprising that losses from storage rots have been complained of.

When washing is properly done there is little if any danger of chemical damage to the fruit or of increases in storage rots. The chief danger of chemical injury to the fruit arises from inadequate rinsing. Many people think that subjecting the apples to an acid wash involves considerable hazard of chemical injury. As a matter of fact, however, apples can remain in the acid wash for several minutes more than are ordinarily allowed without any danger of chemical injury if they are thoroughly rinsed with fresh water upon removal. Of course, the stronger the acid used the more necessary it is to rinse thoroughly and this is particularly important if soapy wetting agents are used with the acid. These are more difficult to rinse off and unless the mixture of acid and wetting agent is removed there is considerable danger of burning in the calyx region subsequent to the washing operation.

Hydrochloric acid injury can be distinguished by its pale or bleached appearance. However, if considerable arsenic is dissolved in the hydrochloric acid the color turns black. The acid injury is not confined to any particular part of the apple, being as likely to occur on the cheek as around the calyx. This is one of the important means of distinguishing it from arsenical injury which comes from the presence of soluble arsenic, a substance which is very toxic to apple tissue. Arsenical injury is usually exhibited by the occurrence of black sunken spots or a depressed black ring around the calyx. In washing apples which carry lead arsenate spray residue, arsenic is dissolved in the hydrochloric acid and of course accumulates in considerable quantity as the washing operation proceeds. Unless the apples are thoroughly rinsed to remove the dissolved arsenic in the washing solution it will soon produce the characteristic arsenical burning. This kills the skin and opens the way for rot organisms which soon invade the apple and cause its destruction.

The Department of Agriculture recommends that hydrochloric acid washing solutions should be discarded and renewed after washing 1,000 to 1,200 boxes, which is ordinarily a day's run. It also recommends that copious quantities of fresh water rinse be applied, if possible at least 3 gallons per bushel. If the water has to be recirculated the incoming water should be applied as a final spray over the fruit when it leaves the machine. If the supply of rinsing water is limited precautions against arsenical burning can be taken by using a lime water rinse. About the strongest this can be made without danger of leaving objectionable lime deposits on the fruit is 2 pounds of hydrated lime to 100 gallons of water. The rinse water should be tested frequently to determine whether or not it is becoming acid through "carry over" from the acid washing section.

When the washing solution has to be heated care must be taken to control the temperature in order to prevent heat injury. This is exhibited by the production of small cracks in the skin. It usually appears first in the calyx region but may extend outward over the cheek of the apples. Apples thus affected dry out very quickly and soon become wilted and shrunken. Heat cracking is caused by the sudden expansion of the skin when the apple is put into a heated washing solution. Apples will stand a washing solution temperature of 100° F. for 3 minutes without particular danger of heat cracking and they can ordinarily be subjected to 110° F. for not longer than one minute without danger of cracking. With higher temperatures or longer exposures the injury is ordinarily to be expected. The very tender-skinned varieties such as the McIntosh are susceptible to heat cracking and particular care must be exercised in handling these kinds.

SATISFACTORY WASHING METHODS FOR SPRAY RESIDUE REMOVAL IN THE EAST*

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Satisfactory washing methods for spray residue removal from apples as grown and sprayed under Eastern conditions does not seem to present the difficulties and expense that the Western grower experiences. Fewer numbers of codling moth sprays, the use of fungicides in most of the summer sprays, only occasional use of stickers and summer oils and a greater summer rainfall, all contribute to a generally more moderate spray coating on the fruit, and one which is usually more easily removed to the tolerances by the simpler washing treatments. Occasional instances where unusual spray programs and materials were used have, however, given rise to difficult problems of removal. It would be advisable for the grower to consider the possible difficulties and procedures necessary to remove the residues before using a spray program or spray materials not generally recommended.

Satisfactory washing methods may be defined as those which reduce the lead residue below the tolerance with an ample margin of safety; will not add materially to the cost of packing, and will not cause injury to the fruit because of the washing process. An ample margin of safety is required because the residue will vary on fruit from different parts of the orchard and from different parts of the tree; the washing solution will generally lose strength as washing proceeds unless additional acid is added; and also the fruit may be expected to lose weight in storage which might raise the residue per pound to the danger point. Because of these variables, washing procedures must be checked continually and should be more efficient than actually required to reduce the residue of a given lot of fruit to the tolerance.

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*The results of experimental work reported herein were obtained through cooperative work between the Department of Horticulture, University of Maryland and the Division of Horticultural Crops and Diseases, United States Department of Agriculture, 1934-1935, on spray residue removal.

Careful handling of the fruit and observance of instructions for washing should avoid the greater possibilities of injury to the fruit. Injury is most likely to follow ineffective rinsing. Should soluble arsenic or hydrochloric acid be carried on the fruit after the fruit has been rinsed, than burning of the fruit will likely occur within a short period after the fruit is packed. The injury is caused by the arsenic made soluble by the hydrochloric acid. If the soluble arsenic which accumulates in the wash tank is not rinsed off completely, then injury will follow. If the hydrochloric acid is not rinsed off, it will dissolve some of the remaining arsenic residue on the fruit and this may cause burning. An adequate supply of fresh water of at least one to two gallons per bushel for rinsing off all traces of acid and soluble arsenic is essential to avoid arsenic injury. If sufficient water is not available attention must be given to neutralizing the acid in the rinse tank by adding pulverized limestone.

Following arsenic injury the most important form of injury would be that following the use of heated solutions. Heat injury usually occurs as fine checks and cracks in the stem and blossom ends and in more extreme cases as large cracks around the fruit. Such fruit will very likely shrivel, mold, and rot in storage. The maximum temperature that can be used safely will vary greatly, depending upon variety, time of exposure in the high temperature wash, and the period and storage conditions intervening between harvest and washing. Freshly harvested fruit is more likely to be injured at a given high temperature than the same fruit after standing several days or after being held in storage. Some varieties, notably Jonathan, York Imperial, McIntosh and others are more susceptible to heat injury than some other varieties. Temperatures higher than 100 to 110 degrees F. are not recommended when heat-tender varieties are being washed. Other varieties may stand a temperature of 120 degrees for one minute. Heat injury if it occurs should be apparent immediately following washing. The temperature, therefore, should be carefully regulated with respect to the variety, condition of the fruit, and the time of exposure. When solutions are heated with a steam jet it may be necessary to keep a more accurate check on the acid strength also. The condensing steam, in raising the temperature of the bath, will gradually dilute the acid so that concentrated acid may need to be added more frequently to maintain an effective acid strength.

Other injuries to fruit also may occur if proper washing procedures or suitable precautions were not followed. Most important would probably be the development of rots and molds in storage. Stem punctures, cuts and bruises, as well as areas on the fruit injured by heat or by arsenic, provide entrance to these organisms. Disease spores will accumulate in the wash tank and unless extreme care is used in avoding all such injuries and in rinsing, the washing process may be the means of infecting many fruits. Careful handling of the fruit in the orchard and in the packing shed as well as selecting the washing machine and grading equipment best adapted to efficient and gentle handling of the fruit, as well as avoidance of arsenic and heat injuries, should largely eliminate storage troubles and shrinkage.

Injuries resulting from washing are therefore largely under the control of the grower. To be satisfactory, however, the wash must also have removed the residues to a point well under the tolerance. The actual removal of the spray residue from fruit depends primarily upon chemical reactions between the hydrochloric acid in the wash solutions and the arsenic and lead residues carried on the fruit. The speed and efficiency of the reaction and consequently the readiness with which the residues are dissolved are dependent upon a number of factors, notably: (1) The amount and character of the residue, (2) the concentration of the acid, (3) the temperature of the solution, (4) the time of exposure to the action of the acid, and (5) the presence of a wetting agent. Certain secondary factors also affect the speed of removal; some of the more important are: (1) Type of machine, (2) variety of fruit, (3) condition of the fruit, and (4) size of fruit.

By the amount and character of the residue is meant not only the actual quantity of arsenate of lead in grains per pound on the fruit, but more particularly whether the residue is combined with lime or a fungicide containing lime and with oil or other stickers and spreaders.

The amount of residue is related to the number of sprays applied, to the rate of application of arsenate of lead and to the lateness of the applications. It has been found also that mineral oil (one gallon per 100) when combined with arsenate of lead is a very efficient sticker and will increase the amount of spray adhering to the fruit. Fish oil (one quart per 100) and a calcium caseinate spreader also will increase the residues. For example, on two varieties of fruit sprayed experimentally at Kearneysville, West Virginia, last year, three pounds of arsenate of lead per hundred gallons being used, the seven cover spray lots carried almost twice as much lead as the five cover spray lots. This was true whether mineral oil, fish oil, calcium caseinate spreader or no spreader was used. In the five or seven cover spray lots of fruit the mineral oil sprayed lots carried the most lead, the fish oil and calcium caseinate spreader lots were intermediate and the arsenate alone lots were the lowest.

The ease of removal of the residue was related to amount and type of the residue, for when these lots were washed at 70 degrees F. with 1½ per cent. HCL for one minute, in a flotation machine, all the five cover spray lots were reduced to the tolerance except the one sprayed with mineral oil, which also had the heaviest load of the five cover lots. The York Imperial samples receiving seven cover sprays to which fish oil and calcium caseinate spreader were added also were brought below the tolerance with this treatment, while the Stayman Winesap which received seven cover sprays like the York Imperial, but which had a heavier load, were not cleaned satisfactorily.

On the fruit sprayed experimentally at Frederick, Maryland, the residues at harvest were not as great as on the Kearneysville fruit. Except those lots sprayed with mineral oil-arsenate of lead in the last cover sprays the residue at harvest only occasionally exceeded 0.060 grain of lead per pound. Without exception these lots of fruit were satisfactorily cleaned to the tolerance of .019 gr./lb. with 0.5 per cent. hydrochloric acid in one minute in a flotation washer. The mineral oil-lead arsenate fruit carried a heavier residue and was not satisfactorily cleaned with this treatment.

From these results the general statement may be made that lead residues not combined with mineral oil and not exceeding 0.66 gr./lb. may with reasonable certainty be removed with cold 0.5 per cent. acid in a flotation machine with one minute exposure, and that similar residues not exceeding 0.10 gr./lb. may be removed with 1.5 per cent. acid under similar conditions. Lead residues exceeding 0.10 gr./lb. or when combined with oil may be expected to require more complex treatment. It must be pointed out, however, that exceptions to the above statements occur. They are made to indicate the probable procedures required when residues of certain amounts and characteristics are encountered. In any instance the grower must check the efficiency of his washing procedure by actual analysis of the fruit, and if the washing is not satisfactorily removing the residues he must be prepared to immediately adjust or modify his procedure to meet the situation.

The effectiveness of the acid bath may be increased by heating. Heating adds to the expense of washing and also may result in injury to the fruit, but is necessary to remove residues that may not be removed by other means. Heating greatly speeds the chemical reaction between the acid and the spray residues. For example, when the samples of Kearneysville fruit mentioned above were washed in 1½ per cent. acid at 100 degrees F., all the samples not satisfactorily cleaned with the cold acid treatment were cleaned within the tolerance except for the seven cover spray arsenate of lead-mineral oil spray program. This lot of fruit still was above the tolerance.

The effectiveness of the acid bath may be further increased by the addition of a wetting agent such as Vatsol, or one of the other effective wetting agents. When Vatsol was used with cold 1½ per cent. HCL, all of the samples satisfactorily cleaned with hot 1½ per cent. acid were also satisfactorily cleaned with this treatment. The seven cover spray arsenate of lead-mineral oil combination, however, still was not cleaned. In most cases the cold Vatsol-1½ per cent. acid wash was more effective than the hot 1½ HCL alone, because on the average the residues following this treatment were lower. To remove the residue from the mineral oil-lead arsenate sample it was necessary to heat the wetting agent-1½ per cent. HCL wash solution.

With this experimental fruit which varied greatly in amount and character of residue the procedures as noted in Table I were necessary to remove the residues to or below the tolerance. The washing was done in a Wayland flotation machine equipped with seven horizontal rows of brushes in the wash tank and with a towel drape dryer. The time of immersion in the wash tank was one minute.

TABLE I. TREATMENT REQUIRED TO CONDITION VARIOUS LOTS OF FRUITS

Concentration of acid. Per cent.	Temperature of acid bath	Lead in gr./lb. before washing	Spray Programs	
0.5	**70°F.**	**.039-.066**	5-7	cover sprays arsenate of lead
			5	cover sprays arsenate of lead + FO[1] in 2
1.5	**70°F.**	**.058**	5	cover sprays arsenate of lead
		.070-.075	5	cover sprays arsenate of lead + FO in 2
		.078-.010	5	cover sprays arsenate of lead + MO in 2
1.5	**100°F.**	**.115**	7	cover sprays arsenate of lead
		.077-.092	5	cover sprays arsenate of lead + MO in 2
		.115-.143	7	cover sprays arsenate of lead + FO in 4
		.108-.122	7	cover sprays arsenate of lead + CCS in 4
1.5 + Vatsol	**70°F.**	**.135**	7	cover sprays arsenate of lead + MO in 4
		.077-.092	5	cover sprays arsenate of lead + MO in 2
		.115-.143	7	cover sprays arsenate of lead + FO in 4
		.108-.122	7	cover sprays arsenate of lead + CCS in 4
1.5 + Vatsol	**100°F.**	**.168**	7	cover sprays arsenate of lead + MO in 4

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[1] FO=Fish Oil; MO—Mineral Oil; CCS=Casein Lime Spreader.

It will be noted that there is a certain overlapping of the check analyses with relation to whether the washing treatment effectively removed the residue to the tolerance. This can be ascribed largely to the sticker used. The order of effectiveness of the washing solutions was as listed in the table, except that the cold acid plus Vatsol solution was as effective or perhaps slightly more effective than the hot acid. A study of the individual results would indicate this to be true especially with oil sprayed fruit. The fruit sprayed with calcium caseinate spreader was not as effectively cleaned with cold 1½ per cent. acid and Vatsol as with the heated acid, though both treatments reduced the residue below the tolerance.

If heat will be difficult and expensive to install in the packing house the use of a good wetting agent may be considered as a substitute for heat. However, wetting agents are difficult to use and to control in flood machines unless defoaming agents are also used. Several such agents are available and are apparently satisfactory. In certain cases of very heavy residues both heat and a wetting agent will be required unless perhaps the fruit can be washed twice as in a tandem machine.

These factors appear to us to be the more important from the standpoint of satisfactorily removing the residues. Other factors have a distinct bearing on the problem, but it is more difficult to make specific statements regarding them.

The variety of apple undoubtedly has some bearing on the problem. Certain varieties may retain greater quantities of residues at harvest due to their form or skin characters; or perhaps the growth and fruiting characteristics of the tree make it easier to cover the fruit more thoroughly with the spray or for the spray to be weathered off. Little accurate information is available, however, that the variety has a great deal to do with the amount of residue carried at harvest or with the ease of removal of the residue. For example, at Kearneysville last year Stayman Winesap and York Imperial were both sprayed with the same sets of spray programs. With four programs the Stayman Winesap carried the heaviest load and with four other programs the York Imperial carried the heaviest loads. Also, seasons may affect varieties differently and thus affect the amount and difficulty of removal of the residue, but this also is a point on which little information is available.

The type of washing machine, particularly certain mechanical features of the machines, may be important in aiding the removal of residues. Brushes, towels, or other means of rubbing and scouring the fruit, are of uncertain value except as they may mechanically remove the residue on the portions of the fruit which they contact. Sixty or more per cent. of the total residue is in the blossom and stem ends, however, and these points are not ordinarily reached by the brushes so that the residue in these places must be dissolved away by the acid. While brushes and towels may be of doubtful value in this respect they are very important in providing for continuous or repeated turning of the fruit and flushing of the blossom and stem ends while in the acid bath. This undoubtedly has a great deal to do with the removal of the residue at these points, especially in flotation machines since apples normally float with stem or blossom end up and some mechanical means must be provided to repeatedly renew the acid at these points.

Apparently the condition of the fruit particularly as influenced by handling following harvest and before washing is particularly important. Less trouble is likely to be encountered if the fruit is washed immediately following harvest. It has been found in the Northwest and also by investigators in the East that delays of a week or more between harvest and washing; or of the storage of fruit before washing greatly increases, the difficulty of removing the residues. Under such handling conditions the fruit may develop a heavy wax or bloom which effectively coats over and waterproofs the residue so that the ordinary washing procedures are ineffective. Heated solutions, wetting agents and perhaps even sodium silicate may be necessary to remove the residue from fruit in such condition. It would seem advisable wherever possible to wash the fruit immediately following harvest.

The size of the fruit may also have a considerable bearing on bringing the residue to the tolerance because of the fact that small apples, having a greater surface per unit weight, will generally carry a heavier coating of residue. For example, a sample of Ben Davis apple was washed in 1½ per cent. acid at room temperature and subsequently divided into different sizes. Lead determinations were made on each size group as follows:

No. apples	Weight grams	Grains of lead per pound
10	518	.035
10	659	.029
10	782	.026
10	811	.025
10	1489	.021
10	1745	.015
10	1892	.014

Comparing the largest and smallest apples these figures show that the residue per pound following the treatment was 2½ times as great on the small apples as on the large apples. The small apples were considerably above the tolerance for lead and the large apples were well below the tolerance. Until some better method of selecting a sample of fruit for analysis after washing has been determined it would seem wise for the grower to choose fruit from the more heavily sprayed trees and of a size closely approximating the minimum size he expects to pack. If this sample is below the tolerance after washing, then the entire package should be below.

Fruit washing methods, from the standpoint of causing a minimum of fruit injury and of removing spray residues of the types and amounts customarily encountered on fruit in this section, seem to be fairly safe and satisfactory. Wash solutions of varying effectiveness have been developed which should prove helpful in deciding on the procedure most likely to remove residues of different types and amounts. Any type of washing machine most suited to the grower's requirements can be used, but consideration must be given to the gentleness of handling the fruit, to the flushing and rotating of the fruit in the acid tank and to the rinsing of the fruit. Sturdiness and dependability are of course necessary considerations. However, careful analysis and repeated checking of results are essential to avoid injury to the fruit and to be assured that the residues are being removed satisfactorily.

COMPARISONS OF FALL, SPRING, AND FALL PLUS SPRING APPLICATIONS OF VARIOUS NITROGEN FERTILIZERS TO FRUIT TREES

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Introduction

In the commercial orchard sections of Maryland, bearing peach and apple trees have shown marked responses in growth and yield when nitrogen fertilizers have been applied. With apples the effects are noted especially under sod conditions. Conversely, lack of nitrogen often has made itself apparent with the usual symptoms of yellowed foliage, early leaf fall, poor growth, and low yields.

As a consequence of the beneficial effects noted in orchard experiments with more quickly available nitrogen fertilizers, fruit growers in this section during the past fifteen years have made liberal surface applications of these fertilizers, usually broadcast by hand under the outer spread of the limbs of the tree in early spring before the buds start. Early spring as a time of application has been particularly favored for increasing the set of fruit and, with apples, for increasing the length of spur growth which ceases shortly after blossoming. Fall has been suggested as a favorable time for application of nitrogen, especially for the more slowly available forms of nitrogen fertilizers, and, also, as Hooker (4) indicated, for the possible tendency to correct the biennial bearing habit. In view of these considerations, the relative merits of fall and spring, as the times of application, as well as the comparative values of the various nitrogen fertilizers in terms of growth, yield and other practical measurements have become important questions in recent years in the minds of many growers. The large number of nitrogen fertilizers which have been placed before the growers in the past few years has increased the complexity of the problem, and some differences in price per unit of nitrogen has made further confusion. The several materials include sodium nitrate, ammonium sulphate, calcium nitrate, urea, calurea, leuna-salpeter, calnitro, cyanamid and potassium nitrate, not to mention some materials which combine nitrogen with phosphorus or potassium, or both.

In an attempt to obtain some information on the problem, extensive orchard plot experiments have been carried on with the cooperation of the growers during the past fourteen years in various apple and peach orchards in the State of Maryland, using more than 3,000 trees in the work. The earlier plots, started in 1922 and 1924, compared sodium nitrate and ammonium sulphate, the two nitrogen fertilizers of importance at that time. In 1926, when several synthetic nitrogen materials were being introduced on the market, more plots were laid out, and again in 1930 additional plots were started, which included another new synthetic material. The time of application has been studied with all materials, comparing applications in the spring before the buds start, in the fall between September 15 and October 15, and in both fall and spring. The last named application was a so-called "split" application, half of the amount being applied in the fall and half in the spring.

In measuring the responses to the various treatments, the main objective was to determine the relative growth and yields of the plots, as determined by measurements of terminal growth, trunk circumference increment, spur growth and bushels of fruit per tree, although in some instances chemical analyses of spurs were made, as well as observations on foliage color, fruit color, and maturity of the tree and fruit.

Since trees which are deficient in nitrogen make very marked responses to applications of nitrogen, it was evident that such trees could be used to advantage in making comparisons among the various materials as well as the seasons of application. However, it also was essential to inquire if trees not lacking in nitrogen could be maintained in growth and yield equally well by all the treatments used. Accordingly, both types of trees were used with both peaches and apples, and the results will be presented from both angles.

Discussion

It is quite evident that nitrogen fertilizers can be used effectively in increasing or maintaining the growth and yield of peach and apple trees in Maryland orchards. In the light of the evidence presented, the consideration of the source of the nitrogen as well as the time of application becomes important only under certain conditions. One condition is found in orchards with trees making little growth and fruiting poorly due to a lack of nitrogen, where the grower desires rapid return to good growth and fruiting. Under this condition the more quickly available nitrogen fertilizers will no doubt give a much greater response in the first season at least than the more slowly available materials. Other investigators also report similar results. In considering a choice of quickly available materials for use in a nitrogen deficient orchard, sodium nitrate appears to be the most effective material when applied in the early spring under the usual soil conditions found in Maryland. However, fall applications of sodium nitrate may be less effective than fall applications of other materials. The relative results to be expected from ammonium sulphate probably are dependent upon the soil reaction, as shown in the New Jersey experiments (5), as well as upon the amounts used per tree. The pH of the orchard soils of Maryland apparently is usually toward the acid side, which may explain to some extent the poorer response from ammonium sulphate compared with sodium nitrate in the orchard experiments. When large amounts of ammonium sulphate are used per tree, the materials may be equal, and when fall applications are compared, ammonium sulphate on some soils may be superior to sodium nitrate. Calcium nitrate theoretically should be equivalent to sodium nitrate in promoting the growth and yield of nitrogen deficient trees, but in one experiment, at least, it seems that it would be classed with the more slowly available materials. From limited trials, calnitro, a combination of ammonium and nitrate nitrogen, appears to be equal to sodium nitrate in stimulating a quick response. Urea, calurea, leunasalpeter, and cynamide probably should be classed as second choice, compared with the other materials, when it is desired to get maximum response in a nitrogen deficient orchard. However, after an orchard has responded in growth and fruiting and no longer is nitrogen-deficient, it is doubtful if any differences in maintaining such growth and fruiting will result by use of any of the nitrogen carriers mentioned. Thus it must be recognized that the condition of nitrogen-deficiency can be changed rapidly, and under the changed conditions the form of nitrogen becomes less and less important.

The previous statements apply to nitrogen-deficient trees of poor growth and fruiting. Another condition is met in orchards of good growth and fruiting, which need annual nitrogen applications for maintenance of these responses. Although the evidence is not conclusive for a long period of time, it appears that equal results will be obtained with all materials, especially if each material is applied at a time of year to be most effective. Calcium nitrate for some reason seems to be better as a fall application, whereas urea appears better in the spring. Ammonium sulphate should give better results as a fall application, in contrast to the results from sodium nitrate, which is favored in the spring. Leunasalpeter appears to give better response when applied in the fall compared with spring applications. Although no evidence was obtained comparing fall and spring applications of cyanamid, this material should give better results as a fall fertilizer.

Considering the uniformly favorable results from a so-called "split" application, applying a material partly in the fall and partly in the spring, would lead one to consider this system for all materials. Aside from the uniformly good response in growth and yield from split applications, there seem to be other advantages of importance which favor such a practice. An earlier maturity of the tree and better coloring of the fruit has been noted in these experiments, which has led growers in Maryland to adopt the practice before valid comparisons could be drawn as to yield and growth. This result is particularly important since the spring applications of nitrogen, especially in large amounts, has seriously delayed the ripening and coloring of the fruit in some seasons, particularly with peaches, when other conditions were unfavorable. In this respect, ammonium sulphate has had a much more pronounced adverse effect than sodium nitrate, probably due to the less rapid availability of the former. Possibly in making split applications of the more slowly available materials, it would be wise to apply the larger portion of the dosage to the tree in the fall, or if the application per tree is relatively small to apply all of the dosage in the fall. The date of fall application in these experiments has been confined to the latter half of September and the early part of October, but it is possible that applications can be made in Maryland as late as November 15 without excessive danger from leaching before the tree has taken up a satisfactory quantity of the nitrogen. That nitrogen is taken in by the tree in the fall and winter, and is stored in the larger roots of the tree, was shown by Aldrich (1) working with York Imperial trees in Western Maryland. In the following spring the nitrogen moves to the growing points of the tree, and hence probably becomes effective earlier than nitrogen applied in early spring. Gourley (3) has shown that fall applications of nitrogen did increase the set of fruit the following spring. If fall applications are made before harvesting the crop, there will be no adverse effect on the color or keeping quality of the fruit, which is the conclusion reached by Aldrich (2) in extensive work in Maryland orchards. Thus it may be concluded that under orchard soil conditions encountered in Maryland fall is just as reasonable a time for nitrogen applications to fruit trees as early spring with the possible exception that with light sandy soils excessive leaching might result. However, split applications, applying part of the nitrogen in the fall and part in the spring, seem desirable on the basis of the results obtained in these experiments, especially when larger amounts of materials are applied, possibly again related to the degree of leaching.

The results of these experiments offer an explanation for some apparent conflicting evidence recorded in other States as to the relative value of nitrogenous fertilizers for orchards. The growth condition of the tree and no doubt its nitrogen reserve must be considered in determining relative responses from nitrogen fertilizers. Thus, dependent on initial tree condition, one experiment would show differences while another would not. The pH of the soil may be a factor, likewise, of importance in comparing ammonium nitrogen with nitrate nitrogen, as indicated with potted trees in New Jersey by Tiedjens (5). A low pH (an acid condition) does not favor utilization of ammonium nitrogen by the trees, whereas nitrate nitrogen is assimilated quite readily at low pH. Whether under field conditions the utilization of ammonium nitrogen would be effected to a great degree by low pH is not known. In the Maryland experiments on York Imperial the large ammonium sulphate applications reduced the pH of at least the upper six inches of soil under the spread of the limbs to below pH 5 without a measurable deleterious effect on the growth of the tree.

In summing up this discussion, it appears evident that the use of nitrogen in the orchard can be modified to include at least half the application of nitrogen in the fall from the viewpoint of growth, yield, coloring and maturity of the fruit. The kind of nitrogen fertilizer to use is relatively unimportant if trees are not nitrogen deficient, except that it might be wise to avoid heavy applications of more slowly available materials in the spring, especially on peaches. With trees showing nitrogen deficiency, the more quickly available nitrogen material should be used until the trees have reached good growth and fruiting. With the exceptions noted, the relative prices of the various nitrogen materials and the ease of handling the materials should govern the orchardist in his choice.

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The data on which this paper is based are derived from 15 orchard experiments in Maryland which will be published in a Maryland Agricultural Experiment Station Bulletin.

THE SAFE USE OF SULPHUR AS A FUNGICIDE

By DR. P. D. PETERSON
Freeport Sulphur Company
New York City

The amateur gardener, who for the first time picks up a package of spray material, be it insecticide or fungicide, can be thrilled to delightful expectation by reading even casually the legend printed thereon. Few if any are the pests, be they ever so persistent, that cannot be checked, inhibited, even annihilated by proper attention to the printed word. At least, so one may infer. All too often, even the man who has gone through the fire of practical experience feels a quickening of the pulse, a shortening of the breath, as he reads that for the first time in the history of man a new material has been created, perfected by the trained hand and mind of the scientist and now, standardized, tried and tested by a fact-finding organization with no axe to grind, is ready to serve man as no material has ever served man before.

This, my friends, is a brief history of most fungicides and insecticides, not excluding sulphur. Sulphur, in fact, has been especially favored. It has reappeared many times, under many names and presumably in many forms, but sooner or later most of you have discovered the parental traits which, regardless of how cleverly they may be masked, are inherent in the mother substance, viz., elemental sulphur.

To elemental sulphur we may ascribe, therefore, much of their potency as fungicides and insecticides. If we do this, it is no more than fair that we ascribe to elemental sulphur some of their shortcomings. Not the least of these is their tendency, under certain conditions of usage, to damage the host plant they are asked to protect. The manufacturer, while making proper claims as to their virtues, acknowledges their limitations, tacitly at least, by causing to be printed a note on each package to the effect that this product being used under conditions beyond his control he, the manufacturer, makes no guarantee as to the final outcome of its usage. Search as he will for a product not so labeled, if it is to be used for the spraying of the living plant, the grower is doomed to disappointment. No reliable manufacturer, regardless of the goodness of his product, can accurately predict or guarantee the final outcome of its usage. In this I express a conviction gained variously, but so deeply ingrained that were I asked to guarantee the good effect, or the lack of harmful effect, of spraying a plant with nothing more potent than water, I should decline that responsibility. Many of you would do likewise for reasons born of experience. With this introduction and the reservations it implies, I am ready and willing to discuss the safe use of sulphur as a fungicide.

Elemental Sulphur

Insofar as possible in this discussion, I shall avoid the use of trade names of products and confine my talk to what may, in a broad sense, be classed as types of sulphur. As a convenient point at which to start I shall describe, in some detail, the common base substance of all sulphur fungicides, viz., elemental sulphur.

As the name indicates, sulphur is an element, just as iron, gold, nickel, tin are elements. The dictionary tells us that an element is a substance that cannot be decomposed or formed by any process known to science. This definition will do for our purposes. I ask you to read again the definition just given. You will note it says that an element is a substance which cannot be decomposed. It does not say that it can exist in but a single form. The element, sulphur, can and does exist in several forms. It may be plastic or it may be crystalline in structure. With these differences in structure are associated differences in properties. In its rhombic crystalline form sulphur is soluble in carbon disulphide; in a certain plastic state, it is non-soluble. I cite these properties not because of any direct bearing they may have on the safe use of sulphur as a fungicide, but merely to forewarn you that sulphur, though an element, is capable of certain transformations that may have fungicidal or phytocidal implications.

Elemental sulphur, whether of plastic or of monoclinic crystalline form, given time, reverts on the plant foliage to the rhombic crystalline state. I do not imply by this statement that sulphur residues, regardless of the nature of the original spray mixture, will be alike in all characteristics. This distinctly is not the case. Many factors enter into the determination of both the original and the final properties of a spray residue. It is in an analysis of these properties, as a matter of fact, that the answer to most of our questions regarding the safe, and I may add, effective use of sulphur will be found.

Let's take the matter of fineness for an example. Much has been said about the virtues of fineness. It is not my purpose here either to defend or condemn these virtues. That you may have a better basis for formulating an opinion of your own, however, I'm going to ask you to follow with me the history of a lump of sulphur which I propose to grind, theoretically at least, until it is sufficiently fine to meet the most exacting requirements. The cube of sulphur which I have in mind is rhombic crystalline in structure. As we crush it into finer and finer particles, what essential properties are we adding to the mass? Without a doubt we are creating larger surface areas. Since sulphur must act as a fungicide through these surfaces we may assume that we are enhancing its fungicidal value. But to just what extent? Have we changed the internal structure of the particle? Probably not. The particles regardless of shape are still essentially rhombic crystalline in structure. Have we changed the absolute fuming rate of the mass—the rate at which sulphur vapor is given off? Slightly, perhaps, because we know that molecules break away from a sharply angled surface more rapidly than from a flat surface. But do these infinitely fine particles retain their identity in the final spray residue on the plant foliage? The answer is no, they do not. The bulk of them, at least, is drawn together in the process of drying to form more or less dense agglomerates. The individual particles, except for a few that escape, lose their identity in the mass. What then have we gained by dividing this lump of sulphur infinitely fine? Certainly we have added much surface to the original mass. But how much? Admittedly there must be a tremendous shrinkage of surface in the drying of the spray residue on the foliage. The shrinkage, we may assume, is from the infinite surface of the free particles as they exist in their dispersed state in the spray tank to the relatively limited surface of the fused residue on the foliage. Measured fungicidally the total free surface of the residue is little more than that which can be established by any good grade of 300-mesh wettable sulphur. The residue from our infinitely fine sulphur, however, will be the more adherent. The very forces which have been effective in destroying surface are among the forces which contribute to adherence. We many assume, therefore, that fineness, insofar as it adds to the adherent properties of the sulphur residue, contributes to the disease control value of that material. Whether a grower should invest money in fineness beyond the point of good adherence, however, is a moot question. I leave it for you to decide. Experience should provide the answer.

Now as to the safe use of sulphur as a fungicide. I shall make the arbitrary statement first that finely divided elemental sulphur is always a safe fungicide for use on plant foliage at low to moderate temperatures. At temperatures approaching 100 degrees F., however, the rate of vaporization of sulphur increases rapidly. These vapors, like all gases, have penetrating powers not possessed by the dried residues on the foliage. At high temperatures, therefore, elemental sulphur may be said to be activated due to its increased rate of vaporization. These vapors, in sufficiently high concentration, have fungicidal and, incidentally, phytocidal properties. At high temperatures, therefore, elemental sulphur becomes an eradicant fungicide. If the temperatures go sufficiently high even the relatively resistant leaf tissues are penerated and killed by the active vapors. What form the vapors take to wreak this damage to the host and parasite cells I leave to your imagination. Your guesses are as good as mine.

I have attempted to show that injury following the use of elemental sulphur on the foliage can be traced to high temperature effects. This is not news to most of you. The literature is full of similar statements. To avoid such injury one might propound the simple formula of not using sulphur sprays during periods of high temperature. This simple formula, however, while useful, will keep few of you out of trouble. Spray residues, once established, have the habit of persisting—frequently for months. A spray applied to foliage in the eariy summer may stay on until late fall. If by chance sulphur makes up a portion of that residue the advent of extremely hot weather may have disastrous effects.

I am using these illustrations to point out that what may be a virtue under one condition may be an undesirable trait under another. This applies particularly to the property called adherence. To be effective as a fungicide any spray or dust must be present on the foliage during the period when the host plant is subject to attack by the parasite. With reference to apple and apple scab, upon which the present talk is supposed to hinge, the crucial control period is usually during the relatively cool period of spring and early summer. At this time an adherent fungicide will usually have distinct advantages over a less adherent fungicide. As the summer progresses toward hot, dry weather, however, scab becomes less and less a factor and spray injury from sulphur presents an ever present hazard. It is my suggestion to you, therefore, that if sulphur best meets your disease control needs at this time, that you look to the less adherent wettable types or to the dusts. Out of deference to the plant you propose to protect, if I were you, I would particularly refrain from using the more caustic fungicides, including our old standby, liquid lime-sulphur. This material, the draft-horse among sulphur fungicides, should be used only when the plants must be carried through a critical disease period. There is little virtue in continuing such a rigorous treatment after the danger of disease is past.

Lime-Sulphur Solution (Calcium Polysulphide)

Lime-sulphur solution, like all fungicides, has its limitations. Overuse it, either by drenching the trees or by repeated applications throughout the growing season and foliage injury will almost invariably result;

drop it entirely from the spray schedule and you may have regrets. Of the sulphur fungicides, lime-sulphur alone can be trusted to bring apples through the cool weather of spring and early summer in a scab-free condition. Carried through this critical period, any sulphur fungicide finely enough divided to adhere to the foliage can usually be trusted to prevent an increase of scab in mid-summer. There may be seasons and localities to which these statements do not strictly apply, but the generalization is supported by the best information available to me.

With regard to the safe use of lime-sulphur much difference of opinion exists. The practical orchardist who has never experienced injury from its use is either a poor observer or an indifferent sprayer, or both. Sooner or later, if used persistently, lime-sulphur solution is sure to betray even its best friends. I count myself as one of them. In my work with sulphur fungicides, I have not been able to get along successfully without it and I haven't always got along successfully with it. Unlike finely divided elemental sulphur fungicides, which play havoc with foliage and fruit only at extremely high temperatures, the polysulphides, of which lime-sulphur solution is composed, may be destructive at any temperature. This is quite apparent to those of you who have sprayed with this material, but is frequently not so apparent to those who hear or read of your experiences. The polysulphides are soluble sulphur compounds which break down on the foliage to form an elemental sulphur residue. Due to their caustic nature the polysulphides, unlike elemental sulphur, are active at low as well as at high temperatures. Under slow drying conditions they may persist for hours on the foliage in their caustic state. Foliage injury invariably follows such a treatment. Under extremely rapid drying conditions chemical breakdown may be prevented, in which case a dry polysulphide residue is established. This may later go into solution on the foliage producing a delayed polysulphide type of injury.

To avoid such injury it is quite apparent that the polysulphides must be eliminated as such either prior to their application to the foliage or immediately thereafter. It is common knowledge that the polysulphides can be destroyed by chemical precipitation. The acids and the acid salts such as iron, zinc, and aluminum sulphate have all been used for this purpose. In some areas, particularly fog belts, one or another of the above materials is used sufficiently often to constitute a common, if local, practice. The fact that the practice hasn't spread indicates that it has its limitations. Most users of lime-sulphur after several experiences with lime-sulphur precipitants let nature take her course.

From what has been said one may conclude that lime-sulphur solution can be used safely only under conditions conducive to a breakdown of the polysulphides to a non-caustic elemental sulphur state. Drying should not be too slow or excessively rapid. Temperatures shouldn't be so high that injury from even elemental sulphur could result. On the average this doesn't allow much time for some of you to cover your orchards. This is unfortunate but true.

What then is the answer to this problem? Resort to fungicides other than sulphur hasn't effected a solution of the spray injury problem, as some of you have learned to your regret. The nearest solution of the problem that has come to my attention in field practice is effected through a more flexible use of lime sulphur and the wettable sulphurs than is permitted under arbitrary spray schedules. Most spray schedules call for the use of lime-sulphur in the pre-bloom sprays on apple and some call for its use in the petal fall and first cover sprays. A few insist on its use throughout the season. The latter program may be a good one for the indifferent or poorly equipped sprayer, but will usually be more rigorous than necessary to control scab under any but extreme conditions. Even in the case of schedules calling for lime-sulphur only in the pre-bloom stage the schedule frequently can be modified to the advantage of the trees. The man who sprays an apple orchard with lime-sulphur solution on a foggy, slow-drying day, even in the pre-bloom period, is exposing the trees to a hazard which is out of proportion to the benefits that can accrue. Under such conditions I should prefer to put my trust in a wettable sulphur and accept what scab may occur. Later, when conditions are less hazardous to its usage, lime-sulphur can always be used to catch up with scab, if necessary. The well-equipped orchardist who has a tendency to over-spray can usually substitute wettable sulphur in all summer sprays calling for the use of lime-sulphur without any high risk from scab. This should be done, however, only with close attention to periods of scabe infection. If weather conditions are particularly conducive to scab I should be inclined to put my faith in lime-sulhpur.

In the above discussion I have avoided deliberately any mention of the various combinations of other materials with sulphur fungicides. The subject is too large to cover in the limited time assigned me. As a general operating principle, it may be asserted, the large addition of any finely divided inert material to an active fungicide will lessen the hazard of the latter's usage. This increased safety is usually effected at the expense of fungicidal value, but where safety is the primary consideration the expense is not too large.

In contrast to the effect of diluting active fungicides with inert materials to increase the safety factor, the converse situation should be mentioned in which the addition of another material may reduce the safety factor. Illustrative of this condition is the reaction which occurs when lead arsenate is added to lime-sulphur solution. The mixture blackens immediately and soluble arsenate is released. This reaction prevents the grower from reducing the lime-sulphur dosage to non-caustic levels at times when a smaller dosage would seem to be indicated. At non-caustic dosages of lime-sulphur, the release of soluble arsenate may actually be so great that the effect of decreasing the polysulphide dosage is to increase the toxic nature of the mixture.

To offset the above reaction various inhibitors have been used. The usual recommendation is that hydrated lime be added to the diluted lime-sulphur solution ahead of the addition of the lead arsenate. The results of this practice have not been uniformly good, but the practice persists, so we may assume that on the average the grower feels that it has served a purpose.

Lime-Sulphur as a Sticker for Wettable Sulphur Sprays

In my own work on lime-sulphur safeners, particularly during the past year at the University of Delaware while on a fellowship with the Crop Protection Institute, I became especially interested in the adhesive properties of different types of sulphurs. Of all the sulphur types available to me for study, the elemental sulphur particles formed in the normal breakdown of the polysulphides on exposure to air in dilute solution were unique in one respect. They were positively attracted (absorbed) to negative surfaces including leaf surfaces. None of the wettable sulphurs were similarly attracted. In practical terms this merely means that the elemental sulphur residue formed in the breakdown of liquid lime-sulphur will stick—at least a goodly portion of it—without going through the formality of being dried. A rain may follow shortly after spraying with lime sulphur solution without effecting a complete removal of the protective residue.

In contrast to the residue established by lime-sulphur solution, on the other hand, good adherence is attained by the wettable sulphurs only after their residues have had a chance to dry and become set. This opportunity is not always afforded before the next rain. Many of the failures of wettable sulphurs to protect against scab can be traced to their removal from the foliage under the conditions specified.

With an eye to the above properties it would seem that if one could combine the adhesive properties inherent in a lime-sulphur residue with the non-caustic properties of the wettable sulphurs a material of unique value might be created. The nearest approach to this objective which I was able to make was through the preparation of a specially processed sulphur which, for purposes of identity, we shall call catalytic sulphur. This material, when added to liquid lime-sulphur solution between the strengths 1-40 and 1-100 of 32° Beaumé liquid lime-sulphur and water, has the property of accelerating the breakdown of liquid lime-sulphur on the foliage and in so doing it takes on much of the adherent character of the residue established by the polysulphides. Incidentally, due to the rapid breakdown of the polysulphides on the foliage the hazard of foliage injury, inherent in their use, is greatly reduced. Of more than passing interest also is the fact that when catalytic sulphur is pre-mixed in a small amount of water with lead arsenate and this mixture is added to dilute lime-sulphur solution, no blackening of the mixture results.

Tests of catalytic sulphur in Delaware and Pennsylvania last year indicate that this material may serve a very valuable function in future spray schedules involving the use of liquid lime-sulphur. The Freeport Sulphur Company's plans call for an extension of these tests before the material is released for marketing. We ask your indulgence until the returns from these tests are in.

Summary

1. Elemental sulphur sprays and dusts can always be used safely on plant foliage during periods of cool to warm temperatures. Under such conditions elemental sulphur can be classed as a protective fungicide.
2. As temperatures approach and pass 100° F. the rate at which elemental sulphur vaporizes accelerates very rapidly. Under such conditions elemental sulphur becomes an eradicant fungicide and a fumigant with respect to some insects.
3. At extremely high temperatures the sulphur vapors may penetrate foliage tissue in sufficiently high concentration to injure or kill the leaf cells.
4. Unlike elemental sulphur the polysulphides can injure plant foliage at low as well as at high temperatures.
5. The polysulphides are used most safely under conditions conducive to their rapid breakdown to the non-caustic elemental sulphur state. This implies warm, moderately rapid drying conditions.
6. To use sulphur fungicides safely a compromise must be made with the weather, frequently at the expense of disease control. A wettable sulphur should be substituted for liquid lime-sulphur if it is necessary to spray on a foggy, slow-drying day, especially if lead arsenate is to be used in the mixture. A non-volatile fungicide other than sulphur is indicated for use on apple during periods of extremely high temperatures.
7. The use of the more adherent sulphur fungicides should be confined to that period when temperatures are not likely to remain high for any extended period of time. Conversely, the less adherent sulphur fungicides are best fitted to mid and late summer usage in much of the apple growing area.
8. The addition of rather large amounts of any inert filler will usually enhance the safety factor, but often at the expense of disease control.
9. A new material, catalytic sulphur, shows promise of filling the long felt need for a lime-sulphur safener. This material is available for test purposes.

REPORT OF THE AUDITING COMMITTEE

Mr. Lloyd Balderston, chairman, reported that the committee had examined the books and records of the Secretary-Treasurer, Mr. A. F. Vierheller, and had found them in order and correct, with all funds accounted for and reported a cash balance of $411.13.

The report was accepted by unanimous vote.

REPORT OF THE NOMINATING COMMITTEE

Mr. G. Rust Canby, chairman of the Committee on Nominations, presented the following nominations:

LIBRARY, UNIVERSITY OF MARYLAND

President—Mr. Fulton W. Allen, Salisbury.
First Vice-President—Mr. C. E. Bryan, Havre de Grace.
Second Vice-President—Mr. Carlyle Barnes, La Plata.
Secretary-Treasurer—Mr. A. F. Vierheller, College Park.

Executive Committee

Mr. G. William Gardenhour, Smithsburg.
Mr. N. C. Graybill, New Windsor.
Mr. W. Lee Allen, Salisbury.
Dr. E. C. Auchter, College Park.
Mr. O. R. Higgins, Hurlock.
Mr. Lloyd Balderston, Colora.
Dr. J. H. Beaumont, College Park.
Mr. G. S. L. Carpenter, Hagerstown.
Mr. G. Rust Canby, Silver Spring.

LIBRARY, UNIVERSITY OF MARYLAND

Representative to the Maryland Farm Bureau Federation, the Maryland Agricultural Society and the Maryland Agricultural Corporation:

Mr. Henry C. Whiteford, Whiteford.

The report was accepted by unanimous vote.

REPORT OF THE RESOLUTIONS COMMITTEE

Mr. E. D. McCain, chairman of the Committee on Resolutions, presented the following resolutions:

We, the members of the Maryland State Horticultural Society, feel that we have had unusually fine meetings this year.

We want to express our appreciation to those responsible for what we consider one of the best programs any Horticultural Society ever had. Also, to the Department of Horticulture for its educational exhibits and to the commercial exhibitors who have been such a big addition to the all-around value of these meetings.

Inasmuch as the Horticultural Building offers such an unusually fine place to hold meetings, which include speaking programs, educational exhibits, and commercial exhibits under one roof, therefore, be it

Resolved, That we instruct our Executive Committee to continue the arrangement for 1936, the same as this year; be it further

Resolved, That we request them to select Tuesday, Wednesday and Thursday, January 7, 8 and 9, as the dates for the 1936 meetings; be it

Resolved, That the Maryland State Horticultural Society express to the President, and Board of Regents, and the staff of the Horticultural

Department of the University of Maryland its sincere appreciation of the use of the facilities of the University and courtesies extended to the Society at the time of its annual meeting.

WHEREAS, as it must to all men, death has come to our valued friend and co-worker and President of this Society, W. Earle Withgott; be it

Resolved, That the Maryland State Horticultural Society express its sorrow and heartfelt sympathy to the family of the deceased; and be it further

Resolved, That a copy of this resolution be sent to the family of W. Earle Withgott.

WHEREAS, as it must to all men, death has come to our valued friend and co-worker, Henry K. Klee; be it

Resolved, That the Maryland State Horticultural Society express its sorrow and heartfelt sympathy to the family of the deceased; and be it further

Resolved, That a copy of this resolution be sent to the family of Henry W. Klee.

WHEREAS, as it must to all men, death has come to our valued friend and co-worker and former President of this Society, J. Walter Englar; be it

Resolved, That the Maryland State Horticultural Society express its sorrow and heartfelt sympathy to the family of the deceased; and be it further

Resolved, That a copy of this resolution be sent to the family of J. Walter Englar.

All resolutions were adopted unanimously.

REPORT

OF THE

Twenty-eighth Annual Meeting

OF THE

Maryland Crop Improvement Association

January 9 and 10, 1935

Baltimore, Maryland

AND OF THE

STATE CORN AND POTATO SHOW

PROGRAMS

Wednesday, January 9, 1935

I. Call to Order—Matthew Harding, Cambridge, Chairman.
II. Maryland Soils, Their Location and Productiveness—O. C. Bruce, Professor of Soil Technology, University of Maryland.
III. Testing Soils for Lime and Fertilizer Needs. A demonstration by Dr. R. P. Thomas, Associate Professor of Soil Technology, University of Maryland.
IV. Discussion—S. D. Gray, Baltimore.

Thursday, January 10, 1935

I. Call to Order—Fred Jones, Darlington, Chairman.
II. Economic Use of the Present Seed Supply—F. S. Holmes, in charge of the Maryland Seed Laboratory.
III. Seed Certification in Maryland. The 1934 Report by F. W. Oldenburg, Extension Agronomist, University of Maryland.
IV. Discussion—Geary Epply, Associate Professor of Agronomy, University of Maryland.
V. Maryland Permanent Pastures, A Survey of Their Fertility Management and Botanical Composition, Fred V. Grau, Department of Agronomy, University of Maryland.
VI. Secretary-Treasurer's Report.
VII. Committee Reports and Business Meeting.

On Wednesday and Thursday the State Corn and Potato Show was held at the Lord Baltimore Hotel.

MARYLAND SOILS, THEIR LOCATION AND PRODUCTIVENESS

O. C. BRUCE
Professor of Soil Technology
University of Maryland

The soils of Maryland occur in three general regions, namely, the Atlantic and Gulf Coastal Plain, the Piedmont Plateau and the Appalachian Plateau. The Coastal Plain, or soils of marine origin, are derived from sediments from the uplands to the north and west. This material, which was later to become soil, was severely acted upon by water in transit to the sea where it was further subjected to the solution work of water. The long contact with water resulted in the removal of considerable amounts of soluble substances from the original rock material. These sediments, from which these soils were derived, vary in size from that of gravel to that of extremely fine material. Since the elevation above sea level, erosion, cropping and the action of organic matter have served to increase the complexity of these soils. The soils of this area are located on the Eastern Shore and in Southern Maryland and comprise 55.76 per cent. of the State. The Piedmont Plateau is residual in character, that is, the soils are the result of weathering in place of granite and similar rocks which were parent to the soil. Since these materials have not been materially transported and have not been subjected to the abrasive action of water, the soils are rather uniform in character. The topography or the "lay of the land" is rolling to hilly and erosion is generally rather active. These soils are located in central Maryland and make up 22.37 per cent. of the State. The Appalachian Plateau also consists of residual soils, but they are unlike the soils of the Piedmont Plateau, in that they are the result of weathering in place of sandstone, shale and other similar rocks. The soils in this region have not weathered to any considerable depth because the land is hilly to mountainous and a considerable amount of the soil has been carried away by erosion. As a consequence, these soils are not as uniformly productive as those of other sections of the State. The soils of this region are located in the mountainous counties of western Maryland and comprise 13.32 per cent. of the State. The limestone soils, or those derived from the weathering in place of limestone rock, are found in various parts of the Piedmont and Appalachian Plateaus. These soils are usually weathered deep, generally lie favorably for agricultural operations and occupy 3.77 per cent. of the area of the State. The river flood plain soils are to be found along the streams in all parts of the State. They are not extensive on account of being narrow, ribbon-like strips next to stream channels, and are therefore farmed with other more extensive upland soils. The sediments from which these soils are derived are the result of surface wash from the surface of upland soils. They are therefore deep and are usually more productive than upland soils. The river flood plains occupy 3.52 per cent. of the State.

In general the soils of Maryland are tending to become acid. A large part of our soils show the need for lime and respond to its application. Too much lime may be as injurious as not enough lime. Therefore, for best results and in the interest of economy, soils should be sampled, tested for acidity and lime applied when shown by test to be needed. Usually, an application of lime once per protation is sufficient for practical purposes. Although many of our soils are productive the use of both lime and fertilizer is profitable as is evidenced by the fact that they are economically used by successful farmers.

Texture refers to the size of the soil particle, while structure refers to the arrangement of the soil particles. The texture of soils is not changed by farming operations; this requires the slow process of weathering. Among the objects of tillage is the modification of structure and the attendant benefits to be derived from such modification. This is accomplished in the preparation of a seed bed but the texture is not changed nor directly modified in the process.

Soils are made up of combinations of coarse and of fine materials. By varying the ratio of coarse to fine materials, different classes of soils are obtained. For example, a loam is equal parts of coarse and fine particles. If, however, the amount of coarse material is increased and the fine material correspondingly decreased a sandy loam is obtained. Similarly, other classes such as silt loam, clay loam, etc., may be obtained by changing the ratio of coarse to fine materials.

The Eastern Shore

The portion of the Coastal Plain occupied by the Eastern Shore may be divided into the brown, well drained soils, the lighter brown, intermediate drained soils and the light gray and black poorly drained soils. Below Queen Anne's County the brown, well-drained soils are rather sandy which makes them best adapted to truck crops. Such soils have a low water holding capacity, are not naturally productive and the bulk of plant food material required by the crops grown must be supplied by commercial fertilizers. Obviously, it would not be economical to produce general farm crops under these conditions. The dark, poorly drained soils probably have a higher level of fertility than the well-drained soils of the lower Shore region. This is due largely to the fact that the texture is usually finer which results in the retention of more water and plant food material. A large part of the white potatoes of the region and a considerable quantity of strawberries are produced on these soils. Winter grains are not successful because they drown out on account of poor drainage. The soils of the upper portion of this region are generally finer textured than those of the lower section. As a consequence, the brown, well-drained soils are best adapted to general and dairy types of farming because of their higher reserve fertility. Good drainage and the necessity for only moderate amounts of fertilizer make these soils especially valuable for winter grains and grass which are essential in dairy and general farming. The soils of intermediate drainage of the upper Shore section are used for essentially the same purpose as the well drained soils. However, they are not as productive and on account of less efficient drainage, the yields are lower. The dark, poorly drained soils are not as extensive as in the lower portion of the peninsula. For the most part, areas of these soils are spotty and they are therefore generally cultivated with other larger bodies of land. The fertility compares favorably with that of similar soils to the south.

Southern Maryland

The well drained soils of this region are those which are underlain with sand material and gravel or a layer of green sand. In either case, the material is sufficiently coarse to provide ample drainage which results in the formtion of a deep, productive soil. The green sand contains a considerable amount of potash but it is so slightly available that it is of very little importance as a source of plant food. Although the soils underlain with green sand are adapted to all crops suited to the climate, it is especially suitable for tobacco and is therefore one of the best tobacco soils of the State. However, a part of this land has a rolling surface and suffers considerably from erosion. Such areas are less valuable than the more favorably lying types of this soil and should be set to hardwood forest. Most of these soils are some variety of sandy loam. The brown soils which are underlain by sand and gravel vary in texture from the silt loam to the gravelly loam. While this land is not always smooth, injury from erosion is not serious. The gravelly loam, which is usually found on the slopes, produces the highest quality of tobacco. In this respect, this type compares favorably with the soils underlain with green sand. It seems that the coarse texture of these soils is an important factor in producing high quality tobacco since the finer soils almost invariably yield a lower quality crop. Tobacco is the main crop but most any crop suited to the climate can be successfully grown. The intermediate drained soils are not extensive in Southern Maryland and therefore are not important agriculturally. These soils are rather spotty, consequently they are usually worked with other more extensive soils. The light gray, poorly drained soils differ from those of the Eastern Shore in that they have an almost level surface and have a very compact hardpan layer in the subsoil. These soils are of low fertility on account of the difficulty of drainage and the poor physical condition resulting from excess water in the soil. The soils of this group are cultivated to some extent but a large part of them are wooded. Tobacco is not grown successfully on account of the fact that a thick leaf of low quality is produced. Another poorly drained type of the area is a varicolored material which is really not a soil. The color is variable consisting of various shades of red, gray, purple and white, which are intimately mixed and with no uniformity of texture. This material is really not a soil because weathering has not occurred to any considerable extent, on account of the compact character of material and the consequent poor drainage. This soil is of low agricultural value and should be devoted to forestry. It is believed that with proper management this could be made good pasture land.

Central Maryland

The soils of this section are separated largely on the basis of color and topography. This is true because the drainage is usually good and no adequate separation can be made on the basis of drainage. Practically all the soils of this region contain enough fine material to retain sufficient moisture, plant food materials and organic matter. This fact makes it possible to economically build up and maintain the fertility of these soils at a rather high level. The light brown soils are generally favorably situated for agricultural operations which accounts for the fact that a large part of these soils are under cultivation. Erosion is not active even on some of the steeper slopes. Granite rocks were parent to these soils and they have usually weathered to considerable depth. The natural fertility is high, making the soils of this group well suited to the general farm crops. Livestock and dairy farming are perhaps the most popular in this section.

The reddish brown soils, locally called "isinglass" soils, are closely associated with the light brown soils. However, the former occupies rougher topography and erosion is also more serious. The mica content makes the soil more open and is one of the causes for erosion injury. These soils are not as deep as the light brown soils and the general fertility is lower. The general farm crops, especially corn and legumes, succeed on these soils although the yield of small grains and grasses are lower than for the light brown soils. This is partially due to lower capacity for the retention of moisture and plant food material. Livestock farming would no doubt conserve the fertility of these soils on account of reduction of erosion.

The brownish red soils are rather fine in texture and, as a consequence, the proper physical condition is difficult to maintain. The area occupied by these soils is relatively small and they are therefore not as important agriculturally as some other soils of the area. The fertility is generally high which makes a good general crop soil, the small grains and grass do especially well. These soils are also adapted to fruit, apples of good quality and color are successfully produced.

The Indian red soils are not weathered very deep, the Indian red rock, from which they are derived, often occurs near or outcrops at the surface. The topography is rolling to hilly and erosion is active especially on the steeper slopes. Drainage is usually good but, on account of the shallow soil, there is a tendency for the soil to become droughty. The droughty condition could be improved by increasing the content of organic matter with stable and green manures. The agriculture consists of the general farm crops but the yields are usually lower than on other soils of the region. Fruit does well on the gravelly types largely on account of good air drainage as this type usually occurs on the higher elevations.

Western Maryland

This region consists of the light brown valley and mountain soils, the reddish brown soils of the strongly rolling areas and the Indian red hilly to mountainous soils. The light brown valley soils of the eastern portion of the region are favorably situated for farming operations, are not subject to erosion and they are the most productive of the region. On account of the fact that erosion is not active, these soils have weathered to considerable depths which accounts for their high fertility. The general farm crops, especially corn, do well on these soils. The light brown valley soils of the central and western part of the region are similar in origin to the same colored mountain soils. However, they are smoother, deeper, retain a greater supply of moisture and plant food materials and are more fertile than the mountain soils. The agriculture is the same as that of the light brown mountain soils but the yields are relatively higher. The light brown mountain soils are difficult to handle on account of erosion and the fact that they are usually shallow. In many places the parent rock lies within a few inches or outcrops at the surface. Consequently, crop yields are relatively low on account of their droughty character and medium fertility. The agriculture consists of the general farm crops although it would probably be best to devote the use of these soils to grass or forestry.

The reddish brown soils occupying the strongly rolling areas are almost as productive as the light brown valley soils. However, they are more expensive to cultivate on account of their rather steep character and they are also injured more by erosion. The fertility is relatively high as a result of deep weathering and good drainage. These soils are closely associated with the light brown valley soils in the eastern part of the area, lying on the steeper slopes adjacent to the valleys, and the agriculture and yields are practically the same. Cost of production is perhaps higher than for the valley soils on account of the steeper slopes. The Indian red soils of the mountainous areas are deeper and more fertile than the light brown soils associated with them. Erosion is rather active on the steeper slopes but this may be greatly reduced by proper management. These soils are adapted to the general farm crops with yields usually lower than those of the valley soils. This group comprises the best fruit soils of the region because they have excellent air drainage and also on account of the fact that they are deeper and therefore retain a greater supply of moisture and plant food materials.

River Flood Plain Soils

The soils of this group occur as narrow, ribbon-like strips along streams throughout the State. They are commonly called bottom lands. These soils make up 3.52 per cent. of the State but the acerage for any specific farm is small. The origin of the materials making up these soils, their texture and drainage are extremely variable making it next to impossible to accurately describe them. Very little of this group of soils is farmed on account of their small extent and the fact that they are subject to overflow. However, the well-drained areas are the most productive of the State but they should be protected from overflow if they are to be successfully farmed. Because of their deep character, high fertility, low position and high-water holding capacity these soils are admirably adopted to grass. For reasons stated, the river flood plains are used extensively for pasture.

Limestone Soils

The soils of this group consist largely of the brownish red, yellowish brown and grayish brown soils of good drainage whose origin is the weathering in place of different varieties of limestones. They are not confined to any particular locality, but are found in various parts of the Piedmont and Appalachian districts. Contrary to expectation, these soils may respond to the application of lime as much or more than soils not derived from limestone. The brownish red soils are of medium depth, have a high moisture holding capacity and are the most productive of the State. The land is rolling to strongly rolling and in places contains considerable limestone rock outcrop. The latter areas are used largely for pasture on account of the difficulty of cultivation. High yields of the general farm crops are obtained with proper management and cultivation. These are the best small grain and grass soils of the State. The yellowish brown soils are perhaps the deepest and are the smoothest of the limestone group. However, they are not as fertile as the brownish red limestones, but they are generally more productive than the non-limestone soils. The agricultural practices and cropping are practically the same as for the brownish red soils, but the yields are slightly lower. The grayish brown soils are rather shallow, occupy rough topography and contain considerable gravel of limestone origin. While the gravel interferes with cultivation to some extent, it is beneficial in that it almost prevents erosion on the slopes and assists in retaining moisture. Good yields of all crops suited to the climate may be had, but they are best known as fruit soils. Apples of excellent color and quality, as well as small fruit, are successfully produced on these soils.

TESTING OF SOILS FOR LIME AND FERTILIZER NEEDS

R. P. THOMAS,
Associate Professor of Soil Technology,
University of Maryland.

Since its establishment the Maryland Experiment Station has made many kinds of tests on the soils to determine their need of fertilizer. Until quite recently these consisted largely of lime requirement tests. Although they were supplemented from time to time with other tests. These supplementary tests have largely been discarded because of expense and time involved. It was soon recognized that these lime requirement tests did not supply enough information to make satisfactory fertilizer recommendations. In other words, lime tests were not the only ones needed.

However, within the past decade considerable advancement has been made in soil testing. Methods have been developed for testing the soil for its available phosphorus and potash. In addition to its lime needs. These tests are based upon the theory that an extracting solution will remove as much plant food in a few moment's time as the plant will be able to obtain in its growth season. A different extracting solution was used for each element tested. That is, it was necessary to extract the soil for both a phosphorus and a potash test. A large number of such tests have been made on Maryland soils. On the whole, very satisfactory results have been obtained with these tests. However, the time consumed and to a certain extent the cost of the chemicals was rather great when a large number of samples were to be tested. Another drawback to the use of these separate tests was that oftentimes the information obtained did not explain the unsatisfactory growth obtained upon the soil.

In order to decrease the amount of time necessary, reduce the cost, and obtain more needed information, a different method was adopted. This consisted in the extraction of a sample of the soil with one extracting solution. Upon this single extraction the amount of available calcium, magnesium, the manganese, phosphorus ammonia, aluminum and nitrate nitrogen are estimated. This extracting solution is slightly weaker than that used for any of the separate determinations, the theory being that the amount extracted should be in proportion to the amount available to the plant. Small amounts of this single extract were taken for the subsequent estimations by the addition of a salt which forms a precipitate or produces a color in proportion to the amount of element present. In addition to these tests on the single extractant of soil the pH or hydrogen ion concentration is determined. The manner in which these tests are made is being demonstrated.

For convenience, the results are recorded either as trace, low, medium, high or certain modifications of these. This information along with our knowledge of the origin of the soil, its physical and chemical make-up its crop response, previous fertilizer treatment and crop to be grown are all considered in making the fertilizer recommendation. The value of these tests lies not so much in the results obtained as in the proper interpretation. The information obtained by the tests is only one link in the chain of facts to be considered in making fertilizer recommendations. It is necessary to consider the ratio of one of these elements or plant food to the other as well as the relative amounts of each which is available. This makes it very difficult for the average layman to interpret the results and emphasizes the need for interpretation on the part of the soil worker. It is doubtful if there is any one standard that can be proposed for interpreting these results which is wholly applicable for two particular soils. Each soil should be considered separately and corresponding recommendations given.

The tests as it is now being used indicate the form of lime needed—that is, whether a high calcium or dolomitic lime material should be used. The previous tests did not indicate this need. In general, the results to date show that for the Eastern Shore soils or Coastal Plain soils of the Western Shore should receive dolomitic limestone in preference to high calcium limestone. This is true in some instances for Piedmont soils, but is not always the case. Some of the Piedmont soils should receive the high calcium limestone of the dolomitic limestone. Oftentimes the use of lime is suggested by this method, when the pH or amount of available calcium and magnesium does not show the need of it. An example of this would be when the amount of aluminum or manganese is high.

The amount of phosphorus obtained in the extract is only one of the factors to consider in making phosphorus recommendations. The form in which the phosphorus normally exists in this soil, the pH and the amount of available bases are all important factors to be considered. Most of the Maryland soils are deficient in phosphorus for the average crops. Likewise, the need of potash is determined from a consideration of several factors in addition to the results of the tests. The need for potash has certainly increased within the last three or four years; that is, the results obtained by the potash tests are lower. The general average for the State being somewhere around medium. The amount of potash recommended then would depend upon a number of factors. The manganese results suggest that the Eastern Shore and Coastal Plain soils may need manganese. The Piedmont soils seem to contain sufficient amounts of this element. It may be that the Coastal Plain soils should receive manganese fertilizer. However, the field results to date have not indicated this. Perhaps our tests for manganese have not been sufficiently developed.

The testing of soils was started by the Experiment Station staff; that is, the Experiment Station men and funds were used for this purpose.

When the number of samples to be tested were comparatively small, the amount of time and money necessary for this purpose was not great. However, in recent years due partly to the demand through the Extension workers the number of samples to be tested has increased considerably. At present this is handled co-operatively between the Extension Service and the Experiment Station. The former furnishing the labor for making the tests as well as collecting many of the samples and the latter supplying the chemicals, laboratory equipment and supervising the testing. Under the present arrangement about 100 samples a week can be handled satisfactorily. If the demand continues to increase, other means will have to be employed. Either additional funds will have to be obtained or some other work discontinued and this take its place. Some have suggested that this could be handled by a charge for each sample tested. This probably would be the most satisfactory method for all concerned if it were possible to collect the money and if it is proper for a public institution to charge for its services. Others have proposed that fertilizer companies subsidize this work, with the idea that in time the public will recognize the need for this work and make suitable provisions.

Regardless of how this problem is finally solved it should be acted upon in the near future. Already many fertilizer companies are testing samples of farmers' soil. Many commercial concerns are selling these various kinds of test kits. Some of the tests used by the fertilizer concerns are reliable and very satisfactory for their particular purpose, while some are not. The same can be said for the test kits being sold. It is nothing but proper or logical that this should be controlled or regulated by the Experiment Station. This would be to the advantage of all concerned. It is the belief of the majority of those with the University, either Experiment Station or Extension Service, that all the soil testing should be made in one central laboratory for the State. The reason for this belief is that the tests are not wholly satisfactory in the hands of the county agents or Smith-Hughes high school teachers or similar specialists who have been using the tests. If a central laboratory were established which could test rapidly all the soils for everyone regardless of whether it is a private individual, fertilizer company, corporation, etc., everyone would be better satisfied. The tests could be conducted much more economically and more uniformly. In addition the interpretation of the results could be made by someone from the Experiment Station or a specialist familiar with all the factors to be considered.

These rapid soil tests must not be considered as a cure for all soil troubles. They are still in the process of development. Their use is not needed on all soils. Probably more soils do not need testing than do. They should be used where there is some soil trouble as indicated by the plant growth or where the previous crop has not been successful.

DISCUSSIONS OF PRACTICAL APPLICATIONS OF SOIL TESTS IN AGRICULTURAL SERVICE

By S. D. GRAY

It is indeed a pleasure to be called on to discuss soil tests and their role in improving agricultural service to the farmers of the State.

There is no great mystery about these rapid chemical tests. They are in simple language, the instruments employed by the soil chemist to detect the weak spots in a sick soil; in other words, a means of detecting nutrient deficiencies which may prevent the normal growth and development of crops or various soil types. They are to the chemist or crop specialist what the stethoscope, thermometer, X-ray, etc., are to the doctor—a valuable aid in diagnosing troubles, making possible recommendations for improving the health and performance of the patient, whether it be a human being or a soil.

Chemical methods have long been used in studying soil fertility problems. The Maryland Experiment Station was among the first stations in this country to use them in a pratical way. Because of the excessive cost of this work and the time factor involved, necessarily their use has been limited. The present "rapid chemical tests" are the results of years of painstaking chemical research, making possible quick detection of nutrient deficiencies and at a very low cost. They, in short, mark the dawn of a new era in soil fertility service—The New Deal—for the farmer.

Maryland farmers are most fortunate to have a soil testing service at their disposal. The officials of the Experiment Station are to be congratulated for their recognition of the value of "rapid chemical test" and efforts to use them as a means of aiding the farmer in more quickly solving his soil fertility problems.

Anyone may purchase a "soil testing outfit." It may be a single element kit, as for lime, nitrogen, phosphorus or potash, or it may be a "Universal kit," which tests for all of the essential elements and some of the rare elements, like copper, manganese or magnesium. The total investment involved would certainly be less for the latter. But why should the individual farmer, county agent, or vocational teacher in Maryland test soils when the Experiment Station with a technical staff of chemists and crop specialists can do it for you, and give the best possible interpretation at the same time.

Most anyone who can read and follow instructions can run the tests and get a result. Suppose the chemicals used have deteriorated, what then? Would the average layman be chemist enough to detect this? Even supposing he was, and did use good chemical reagents, would he be agronomist enough to properly interpret the test? My answer, based on my observations and experience is, in short, the greatest aid to the farmer will result from having your testing and interpreting done by your agricultural Experiment Station. Certanly, I don't think any county agent or vocational teacher would wish to attempt to render a service unless he was sure it was a real contribution.

Farmers should know a soil testing service is available. They should be told that the service is primarily for sick soils. Unless this is made clear, there will be literally thousands of samples sent to the station, probably 75 per cent. of which would be average productive soils, not presenting any problem.

In fairness to the farmer and to permit this valuable service to function as it should, let it be understood that the service is for "sick soils," soils obviously below par. In this picture the extension specialists, county agents and vocational teachers have a big responsibility.

THE ECONOMIC USE OF THE PRESENT SEED SUPPLY

By F. S. Holmes,
University of Maryland,
In Charge of the State Seed Laboratory.

With prices of farm seeds as high as they are at the present time because of the drought of last summer, farmers are confronted with a serious problem.

The 1934 production of many kinds of farm seeds is the smallest for many years. Furthermore, this very light production is aggravated by an unusually small carry-over of seeds from previous years. Alfalfa, alsike clover, red clover, sweet clover, and timothy are the "grasses" most generally used in this State. The production of alfalfa seed is four-fifths normal; that of sweet clover seed is about one-half normal. The 1934 production of alsike clover, red clover and timothy seeds is only one-half normal and is the smallest on record for each of these three kinds of seeds. Many other kinds of farm seeds will not be available in normal amounts during the coming year.

Confronted by such conditions it is evident that it is not too early to begin to plan for farm seed requirements for the coming spring. Those who delay making their plans are likely to find that suitable seeds are not to be had at any price. It is always advisable to make provision for seed requirements before the best seed stocks are exhausted and while there is still time to have seeds tested before they are planted. It is particularly desirable that such precautions be taken at this time.

Every purchaser of seeds wants to get as much as he can for his money, and while there is no fault whatever to be found with this attitude, many practices having such an end in view are not sound. One of the most unsound of these practices is the buying of seeds on a price basis only, which is in reality an attempt to beat the seller at his own game. Such a practice, in the form of a shell game, for example, may afford a kind of thrill at the county fair, but it saves the farmer no money with which he buys seeds. It is even more foolish to try to save money by purchasing seeds from a mail order house that sells farm seeds for less than established market prices. Seeds sold by these firms are invariably dear at whatever prices are paid for them, and in many cases they would be dear if they cost nothing at all. Seeds should never be bought from any one who is not *known* to be honest and reliable. With seed supplies as short as they are, many lots of seeds that ordinarily would not be offered for sale for seeding purposes will be on the market during the coming year. Purchases, therefore, must be made with unusual care in order to avoid serious losses and disappointments.

The scarcity of farm seed supplies on the general market will cause more locally grown and home-grown seeds to be planted this coming year than is generally the case. If locally grown seeds free of injurious materials and organisms and of average plant producing capacity are available they will be the best seeds to use because of their known adaptability. It is of the utmost importance to use seeds that are known to be that variety or strain best adapted to climatic and soil conditions and to the particular purpose for which the crop is to be grown. With climatic and soil conditions as carried as they are in our country, however, "United States grown" or "domestic" seed may be no better adapted to local conditions than "foreign" or "imported" seed.

Whatever the source or place of origin of seed it should be free of noxious weed seeds and it should not carry a high percentage of common weed seeds. One may feel that a few more or a few less weed seeds of the kinds which are generally abundant in local areas make no difference as to the desirability of a lot of seed. However, if these weed seeds are present in the amounts in which they are often found in locally grown seeds they do make a difference. A bulk of seed which carries 20 per cent. of weed seeds is exactly 25 per cent. more costly than is a similar bulk which carries no weed seeds. This increased cost is due to the smaller amount of "pure seed" in the uncleaned bulk of seed. High percentages of weed seeds, even if the resulting weeds are not objectionable, often make locally grown seeds very expensive because of the lowered plant producing capacity of the bulk of seed. Locally grown seeds are highly desirable because of their adaptability but the weed seeds should be cleaned from them before they are bought. No one should have to pay "pure seed" prices for weed seeds.

The present scarcity of farm seeds will cause many lots of old seeds to be used in 1935. There is no objection to using these provided the plant producing capacity of such lots of seed is determined just before they are to be planted and a sufficient amount of the seed is used to give a proper stand of plants. There is no general rule as to how old seed may be and still be suitable for planting. Seed of one harvest may retain its vitality much longer than seed of the same kind of another harvest. Different lots of seed of the same harvest will vary in the retention of their vitality depending upon the conditions under which they have been stored. The only dependable information as to whether a lot of seed is too old to plant must come from a germination test. To be of any value to the farmer, however, a germination test must be made in such a way that, when used with other information determined in the seed laboratory, it will show the actual potential plant producing capacity of the seed.

Farm seeds can be used economically only when their potential plant producing capacity is known. If eight pounds of seeds of one lot give as many normal plants in the soil as ten pounds of seeds of another lot it is uneconomical to sow the two lots at the same rate. Obviously, the higher the plant producing capacity of a lot of seed the smaller the amount required to obtain a given number of plants. Variations in the plant producing capacity of different lots of seed are surprisingly great in terms of the amount of seed required to give the same number of plants on a unit area of land. A preliminary study of 566 samples of red clover seed being sold in Maryland during the six-year period from 1928 to 1933 shows, for example, that in order to secure the number of red clover plants required for a good stand these samples would have had to be used at rates of from six pounds of seed per acre to forty-five pounds per acre. It is at once apparent that planting such a group of seed at any blanket rate, such as ten pounds per acre (the usual rate), is most uneconomical for while some lots of seed will not give as many plants as are needed for a good stand other lots will give more plants than are needed. More than one-fourth of all these lots of seed could not be used at the usual seeding rate for red clover without material losses due to using either not enough or too much seed. Our farmers should avoid such loses, particularly at times such as these when the economic use of seeds is both a necessity and a patriotic duty.

The Maryland Seed Laboratory stands ready to give our farmers the information which they need for using such seeds as are available in a truly economic way. This information will be in such a form that every farmer can understand it and make practical use of it. All that the farmer needs to do is to send a truly representative sample of the seed he proposes to use to the Seed Laboratory early enough for the necessary information to reach him before planting time. He should allow himself at least two weeks; four weeks may be necessary. First come must be first served.

SEED CERTIFICATION IN MARYLAND

The 1934 Report by F. W. OLDENBURG
Extension Agronomist, University of Maryland

To answer the farmer's question, "What is the best variety for me to grow" the Maryland Experiment Station had devoted much effort since its foundation in trying out many varieties of wheat and other grains to determine how they yield under Maryland conditions, finding their strong points and their weak points. Years were spent in improving some varieties and developing new ones.

As a result of this work and of the experience of our farmers the following varieties have been found to be best adapted for our State and are, therefore, recommended.

SMALL GRAIN VARIETIES RECOMMENDED FOR MARYLAND

Varieties	Recommended for:
WHEAT: Mamoth Red Leapland	The Coastal Plains and the lower elevations of the mountain valleys. The Leapland on rolling ground.
Leapland Forward Currell	The Piedmont and other parts of the State except where Mammoth Red is recommended.
BARLEY: Tennessee Winter	All parts of the State except the mountain area. Spring barley is not recommended except in Garrett County and western Allegany County.
OATS (Spring): Cornellian Iowar Fulghum	All parts of the State where it is profitable to grow spring oats.
OATS (Winter): Winter Turf Culbertson	The Southern Maryland counties and the Southern Eastern Shore counties. South of a line drawn from College Park to Annapolis, Easton and Federalsburg.
RYE: Abruzzi	Central, eastern, and southern Maryland, especially for green manure and winter pasture.

In order that farmers may take advantage of the information, there must be sources of good pure seed of these varieties. To cooperate in the work of establishing such seed sources and encouraging the growers, was one of the purposes of establishing the Maryland Crop Improvement Association years ago. Now the Association has the Maryland Seed Certification Board, cooperating with the State Experiment Station and the Extension Service to take care of the business of certification.

The terms used in the seed certification work are as follows:

(1) *Foundation Stock and Registered Seed.*

The original seed, as developed at the Experiment Station or by an approved breeder, is known as Foundation Stock or as Registered Seed.

Certified seed is defined as seed of variety or strain approved by the State Experiment Station, and certified as to trueness to type purity, viability, and suitability in accordance with the standards laid down by the Maryland Seed Certification Board.

(3) *Listed Seed.*

If upon inspection the seed does not quite meet the high requirements set for certification, falling below the standards in one or more ways, such as having a trace of garlic or some other noxious weed, or having slightly too high a mixture of other varieties or impurities, but if it otherwise meets the requirements for certification, it is designated as "Listed Seed." When sold as such, it must bear a statement of its exact condition. It is good seed.

(4) *Not Passed.*

Grain that is infected with stinking or covered smut, that is too much mixed with other varieties and has noxious weed seeds, or does not reach a high germination is not passed for certification and is not listed as good seed.

List of Growers Applying for Certification in 1934

	WHEAT	County
1.	R. C. Coulby	Talbot
2.	A. G. Ensor	Harford
3.	Warshall Heaps	Harford
4.	W. A. Heaps	Harford
5.	J. M. Hoshell	Baltimore
6.	Fred Jones	Harford
7.	Joseph McGraw	Baltimore
8.	F. H. McConnell	Harford
9.	John Naylor	Kent
10.	Guy Nelson	Baltimore
11.	L. A. Sutton	Kent
12.	W. S. Stowell	Queen Anne's
13.	Ernest Vesclovsky	Baltimore
14.	Harvey Wirtz	Baltimore
15.	C. E. White	Montgomery
16.	J. B. Weaver	Dorchester
17.	J. M. Wheatley	Caroline
18.	W. H. Evans	Caroline
19.	Thomas Thresher	Frederick

	BARLEY	
1.	A. G. Ensor	Harford
2.	James Galbreath	Harford
3.	M. C. Sherman	Queen Anne's
4.	W. A. Heaps	Harford

	RYE	
1.	Christian Huerich	Prince George's
2.	J. B. Weaver	Dorchester
3.	J. M. Wheatley	Caroline

Procedure for Certification

Application for certification must be made by sending an application blank, properly made out, to the MARYLAND SEED CERTIFICATION BOARD, COLLEGE PARK, MARYLAND, with the fee enclosed, at least three weeks before harvest time. In the case of WHEAT, not later than June 15.

Application Blanks may be obtained from the County Agent or from the Maryland Seed Certification Board at College Park, Maryland.

Eligibility for Certification

Only varieties that are recommended by the Experiment Station and that are at least eligible to certification under the rules of the Board will be inspected.

Each grower will be required to give information as to the source of his seed stock and a reasonable guarantee as to its idenity.

Inspections

Two inspections will be made of all seed wheat and other grains offered for certification. The first inspection is made before the crop is harvested. The second inspection consists of a very careful examination by an agent of the Board, of a representative sample (one-half peck) of the harvested grain, in the condition it is offered for sale.

Cost

No charge is made by the Maryland Seed Certification Board or by the Maryland Crop Improvement Association for this service. The following fees will, however, be charged to cover part of the traveling expenses of the inspector, and to guarantee the good faith of the applicant.

Fees

The fee accompanying application for inspection is $2.00 supplemented by a charge of ten cents (10c) per acre for all above ten acres. If the seed fails to pass the requirements for certification or for "listed seed," all charges except the initial $2.00 will be returned.

Field Inspection

The best time for field inspection is before harvest but after the grain has changed color so that the percentage of mixture of other varieties can be better determined by the inspector. He also notes the presence and amount of noxious weeds, particularly garlic, cockle and chess or cheat. He also notes the percentage of plants with smut, bunt (stinking smut), fusarium and septoria. The seed must be reasonably free from these and other diseases to pass inspection.

Cleaning the Fields or Roguing

Before the inspector arrives it is wise for the grower to go over the grain field carefully and rogue out the noxious weeds, off-type grain, other grains and impurities that cannot be removed by the thresher or the fanning mill.

Failure to do this thoroughly is one of the principal reasons why so few grain fields pass certification and must be put into the *Listed Class.*

Sample of Grain

As soon as possible after threshing and cleaning, the grower is requested to send prepaid to the Maryland Seed Certification Board, College Park, Maryland, one-half peck sample from each field that passed field inspection. Growers are urged to send samples as far as possible in advance of the dates indicated. In the case of each sample sent, the grower shall guarantee that it is representative of and not better than the entire lot of seed to be offered for sale.

Before allowing certification, it may be deemed necessary to make a supplementary bin or crib inspection at the place where the seed is stored.

Wheat, barley and winter oats should be sent prior to September 1, spring oats prior to February 1.

The number of those who call for certification does not change much from year to year.

Below is given the summary for 1934. This does not include potatoes of which there was 94,712.5 bushels certified.

SUMMARY FOR 1934 SEED CERTIFICATION WORK

Grain		Number of Growers	Acres Inspected	Bushels
Wheat	Certified	3	47	1,360
	Listed	5	87	2,560
	No Sample	9	100	3,050
	Not Passed	2	25	700
	Total	19	259	7,670
Barley	Certified	2	15	600
	Listed	1	10	350
	No Sample	1	10	500
	Not passed	1	38	900
	Total	5	83	2,350
Abruzzi Rye	Certified	2	31	620
	Listed	1	8	200
	No Sample	......	....	....
	Not Passed	......	....	....
	Total	3	39	820
Total Grain		27	381	10,840

In other words, in 1934, 27 farmers had their fields of grain inspected for certification. This involved a total of 381 acres on which 10,840 bushels were grown of wheat, barley and rye. Of this, 2,580 bushels passed certification, 3,110 bushels were passed as listed seed, and 3,050 bushels were classed as good seed, but the growers failed to send samples for laboratory inspection but the field inspections had shown that the grain was good. One thousand six hundred bushels did not pass.

This table does not include potatoes of which there were 94,712.5 bushels certified.

DISCUSSION

GEARY EPPLEY

Associate Professor of Agronomy

University of Maryland

Gentlemen, you have had brought to your attention this morning a State law and a State regulation that are designed for the benefit of the farmers. Very few people know that they are in existence. The Maryland State Seed Law passed in 1912 has been operating since then and has been the means of improving the quality (that is, the purity and viability) of seed sold to our farmers. It has done this in spite of the lack of assistance from the farmer. Mr. Holmes has pointed out ways the farmer can make use of the Seed Testing Laboratory at the Experiment Station. A little study of the law or discussion of it at meetings would bring out how people could make greater use of it. One outstanding example of what a farmer lost by not knowing that all lots of seed of ten pounds or more sold in the State must have the name of all noxious weeds listed was brought out in a letter I received. This farmer from Cecil County stated that he had planted a pasture and later found the enclosed tag on the bag. On the tag was listed the percentage of Canada Thistle present. After it was too late he wanted to know what to do. All his worries would have been saved if he had known of the existence of the law and read the tag before planting.

One of the greatest achievements of the Experiment Stations of the United States and including our own has been the development of superior strains of the various plants, but there has been no national system set up to control the distribution of the seed. Many States have set up systems of certification but there is lack of uniformity among States and the surface has not been touched. One of the greatest needs in agriculture today is a National Seed Certification system and the working of the system throughly taught to the farmers. In fact, the farmers need more information concerning the system now in vogue.

There is a Federal Seed Staining Law to assist the farmers, a Federal System of Seed Verification to help farmers know in what State the seed they are buying was grown. These together with the aforementioned State systems should be thoroughly studied by farmers and included in the programs of the Extension Service and farm organization so that we may benefit by what we have; then, this organization should work for the necessary improvement in the present system and those new developments needed.

MARYLAND PERMANENT PASTURES—THEIR MANAGEMENT, BOTANICAL COMPOSITION, AND SOIL FERTILITY

1934 SURVEY

FRED V. GRAU
Department of Agronomy
University of Maryland

Maryland Conditions Favorable for Pasture

Climatic conditions in the greater part of Maryland favor the production of permanent pastures. The mean annual precipitation varies from 34 to 55 inches. The temperature has a mean annual range of 47 to 57 degrees F. The length of the growing season ranges from 211 days in St. Mary's County to 122 days in Garrett County. Altitude varies from sea level to over 3,000 feet. These factors, with proper soil conditions, are conducive to the growth of forage grasses. Bulletin 351 lists the soils of Maryland by counties and classifies them as to their adaptation for various crops, including permanent pasture. Most of the major soil series are admirably adapted to grass growing but it has long been the firm opinion of agronomists that permanent pastures in the humid eastern United States fall considerably short of efficiently producing a maximum of cheap feed. This survey of Maryland's permanent pastures was planned for the purpose of ascertaining their condition as regards soil fertility, botanical composition, and management practices, and for the purpose of determining the relations among the various practices and conditions in the different sections of the State. The ultimate purpose is to issue suggestions for the improvement of pastures throughout the State.

The study was launched June, 1934, in the vicinity of College Park and adjacent Montgomery County, was continued into Southern Maryland, followed by Eastern Shore. As the season progressed the study progressed through the Piedmont, the Blue Ridge, the Great Valley, terminating in the Allegany plateaus and ridges in late August.

Methods of Survey

Individual farms were selected at random to represent different areas and soil types. Included in the 270 farms studied were the 33 farms which are co-operating with the Experiment Station in crop, soil fertility and management studies. The remainder were selected purely at random while driving along the road. It was common practice to inquire as to which farmers in a given community had a considerable acreage of pasture, regardless of management practices, largely ignoring very small two- and three-acre pasture lots which would not be truly representative.

Only a word need be said about the details of the survey. Permission being granted to sample, all available information on management practices was taken on sheets provided for the purpose. In the pastures, as a composite soil sample was being taken, the vegetation was studied and at the end of the trip around the field the percentages of the various forage and weedy plants were recorded. The last step was to evaluate all the apparent factors and to assign a rating to each pasture. This rating is a figure representing the carrying capacity of the pasture, the relative condition of it as to vigor, weeds—in short, its relative excellence as compared to a mental standard of what a good pasture should be. The ratings given the pastures are relative and, as will be seen, agree very closely with the level of soil fertility as indicated by the quick tests made upon the accompanying soil samples.

Soil samples were taken uniformly down to a 6-inch depth, the final sample being a composite of 15-20 borings from different parts of the field. If more than one soil series was represented in the same field, Chester and Manor, for example, separate samples were collected for each series. When the field work had been terminated in late August, the soil samples were passed through a 10-mesh screen to remove all stones and subjected to a routine treatment. The pH values were determined with the aid of the Truog-Hellige outfit, using the Triplex indicator and 12-hole spot plates. Not only is this method rapid, but reasonably accurate as well. The lime requirement of each sample was determined by the thiocyanate test (Rich-or-Poor), results being recorded as pounds of ground limestone required to the acre. Individual tests for calcium, magnesium, phosphorus, potash, nitrates, ammonia, manganese and aluminum were conducted on small aliquots of a single soil extract, using the Morgan outfit as described in the paper by Dr. Thomas.

Geographical and Topographical Divisions

As shown by this chart, the State of Maryland is geographically, as well as topographically, divided into sections or regions. Each section or region is characterized by a separate and distinct group of related soil series.

The Coastal Plain is divided into three regions: Northern Eastern Shore, Southern Eastern Shore, and Southern Maryland, each of which is characterized by predominantly sandy soils derived largely from marine sediments. The Piedmont is made up of heavier soils derived from crystalline, igneous and metamorphosed rocks and include such well-known series as Chester, Manor, Frankstown, Montalta, Conaree, Bermudian, Penn and others. To the west we encounter the Ashe and the Porters series of the Blue Ridge and Middletown Valley; the limestone soils of the Great Valley; and the Berks, Dekalb, Upshur, and related soils of the Allegany ridges and plateaus.

Before the details of the analysis of the data are presented it might be well to make a generalized statement concerning existing conditions so that the presentation of the results be not misinterpreted.

Current Pasture Practices

Over the State as a whole there is a general tendency to neglect the pastures for the cultivated crops. As nearly as it can be estimated from the information at hand, about half of the pastures have received no treatment whatever, aside from an occasional mowing, since the time that they were seeded or were allowed to develop into pastures. A very large part of the remaining 50 per cent. receive nothing but manure applied at irregular intervals, usually when there is some left over after the cultivated fields have been treated. Usually this is spread on the poorest knolls or hillsides close to the buildings, the outlying pasture fields receiving little or none. Some farmers treat their pastures with lime every three or five years, and there is some commercial fertilizer used, but the practice is not common for this reason. Too often pastures are located in fields which are difficult to cultivate for one reason or another—rock outcrops, rough stony land, poor drainage, stream bottoms subject to overflow, and the like. Such fields do not permit the use of machinery and, as a result, they are largely neglected. It is not my thesis, however, to discuss the location of pastures since this was quite thoroughly discussed before this body in 1930 by Mr. Abbott, Mr. Eppley and Mr. Wolfe. My purpose is to present our analysis of existing conditions.

In only a few cases are pastures mowed frequently enough to discourage the production of weed seed. Usually there is but a single mowing a year—in the fall after the farm has been seeded to weeds. In some sections it is a commom practice to put the permanent pasture through a rotation when it begins to "run out." This definitely establishes the fact that the farmers who do this realize that grass needs plant food. In the rotation lime and fertilizers are used. The "carry-over" improves the soil sufficiently so that, when reseeded, the pasture furnishes fair grazing until the supply of plant food is exhausted, when the pasture again begins to "run out," and the process is repeated.

In most cases where year 'round pasturing is not practiced, stock is held off the pastures in the spring until the grass has made a good growth. This, however, is often done in order to allow the onion crop to subside. Many turn their young and dry stock out to graze the onions off before the milk cows are allowed access to grass.

Grazing in most cases is continued at least until the first of the year—often until the soil becomes soft during spring thaws. Year 'round grazing is most prevalent in the Coastal Plain areas and in the Allegany ridges and plateaus—the regions of poorest pastures. A short inspection trip on New Year's Day through the important pasture section of the Piedmont revealed pastures completely stripped of any protective growth of grass—stock grazing the forage so closely that the bare ground was in evidence. In effect such grazing resembles mining—everything taken off and nothing returned.

Age of Permanent Pasture by Sections

For the State as a whole, permanent pastures are allowed to remain as such for about 35 years, on the average. In Southern Eastern Shore and in Southern Maryland they "run out" and are plowed up in 14 to 15 years. Some, however, are known to be over 100 years old and are in good condition today due to proper management.

Pastures in Northern Eastern Shore and in the Great Valley remain for 29 to 30 years, respectively. In the Blue Ridge their duration is about 35 years, and in the Piedmont 40 years. In the Allegany ridges and plateaus the figure is 41, but, as we shall see, this does not necessarily indicate excellence of conditions.

It may be interesting to compare the figures for the major soil series in the Piedmont. Those pastures on Penn, a shallow soil, last for about 30 years. Those on Manor and Chester last 34 to 36 years, respectively; 40 years on Montalto, and 55 on Hagerstown (Baltimore County). The oldest ones are found on Frankstown (61), one of the finest soils, and on the flood plain soils (61) (Congaree, Bermudian, etc.), because these soils are little used for anything else but pasture due to their position with respect to periodic overflow.

Farming Systems Represented

About 75 per cent. of the pastures included in this survey represent those on dairy farms. Fifteen per cent. were from general farming systems, and 10 per cent. from beef farms. The other 5 per cent. include both horse and sheep raising and, according to the census figures, quite fairly represent conditions throughout the State.

Rating of Pastures

The relative excellence of pastures in different sections of the State is represented by the following figures which may be taken as an approximation of the degree of approach to the ideal pasture. For the State as a whole this figure is 65, on the basis of 100. From the poorest to the best they are as follows: Allegany ridges and plateaus, 40; Southern Maryland, 48; Southern Eastern Shore, 52; Northern Eastern Shore, 58; Blue Ridge, 68; Piedmont, 69; and the Great Valley, 78. The high figures for the limestone soils and the low figures for the sandy soils are in accordance with our conceptions of the relative values of these soils for grass growing.

In the Piedmont area the poorest pastures are found on the Montalto and the Conowingo soils. Manor and Chester are about the same, 66 and 67 respectively. Pastures on Hagerstown rate slightly less (73) than those on Penn (76) and alluvial soils (77). The superiority of pastures on limestone soils is again reflected in the figure for the Frankstown series where the rating is almost 92.

Pasture Types in Maryland

Practically all permanent pastures in Maryland are phases of the Kentucky bluegrass—white clover type. These are the two main pasture grasses in 75 per cent. of the land area. Crabgrass is an associated grass which furnishes considerably summer grazing but it, together with bluegrass and white clover, gives way to bent grass (Agrostis tenuis) and poverty grass (Danthonia spicata) in the Allegany Ridges and plateaus.

Forage plants such as redtop, timothy and orchard grass, fescue, lespedeza, and the clovers occur frequently but in very small amounts and are relatively unimportant in permanent pastures.

Botanical Composition of Maryland Permanent Pastures

The forage plants which furnish the grazing in the permanent pastures of Maryland in the different sections are best represented by the charts. All figures are in per cent. of total vegetation. The main feature of interest is that Kentucky bluegrass is best on the limestone soils of the Great Valley, becoming a minor factor in the mountain pastures of Allegany and Garrett counties. It is the most important pasture grass that we have. The amounts of bluegrass and white clover, as per cent. of total vegetation, are shown by these figures and are illustrated in the charts for the different sections.

	Kentucky Bluegrass	White Clover
Great Valley	42.4	13.3
Blue Ridge	25.6	20.2
Piedmont	24.6	21.5
State Average	22.4	20.0
Northern Eastern Shore	12.0	28.0
Southern Eastern Shore	12.8	14.4
Southern Maryland	11.5	20.0
Allegany Ridges	8.0	5.8

It will be observed that bluegrass and white clover, while they are associated, do not vary in the same way. The highest percentage of white clover is found in the Northern Eastern Shore section, and the least in the Allegany section. The relative amounts of the two together, however, have largely determined the rating of each pasture, along with other considerations. Just why the amounts of each vary as they do we shall see when we consider the soil fertility levels with regard to lime, phosphorus, and other nutrients.

We find the largest amounts of weeds in the mountain regions—almost 50 per cent. For the State as a whole about 30 per cent. of the pasture vegetation is made up of weeds. That means, in other words, that one acre in every three is useless for grazing purposes. Were this condition to exist in the cultivated crops there is little doubt but that something would quickly be done about it.

WEEDS

	PER CENT
Allegany Ridges and Plateaus	49
Southern Maryland	37
Southern Eastern Shore	34
Northern Eastern Shore	32
State	30
Piedmont	26
Blue Ridge	26
Great Valley	20

In the Piedmont the per cent. of weeds varies from 10 per cent. on Frankstown soils to 30 per cent. for the Manor soils. Pastures on stream bottoms and flood plain (alluvial) soils have about 8 to 10 per cent. less weeds and a correspondingly greater amount of forage grasses than the upland soils from which they are formed.

Relation of Soil Fertility to Pastures

As a general thing, it may be said that the level of fertility of pasture soils is low. This varies with the management practices but the practice of year 'round pasturing, together with lack of proper measures to maintain fertility, causes pastures to deteriorate with the result that the carrying capacity is reduced and that weeds replace the desirable grasses.

Two of the most outstanding features of the survey are, first; the universe relation of the amount of Kentucky blue grass to the lime requirement, and second, the direct relation of the amount of white clover to the supply of phosphorus. This means that as the lime requirement increases, the Kentucky blue grass decreases. Similarly, as the amount of phosphorus in the soil decreases, the amount of white clover decreases likewise. There is also a direct relation between bluegrass and phosphorus. This indicates that the supply of lime and phosphorus must be maintained if one is to have a good pasture.

Pastures on Chester and Manor soils which regular receive manure only furnish about 11 per cent. more grazing than those which receive no treatment. Those which receive lime every 3 to 5 years, together with manure and some fertilizer, principally phosphorus, furnish over 25 per cent. more grazing than the untreated pastures. Weeds are reduced in proportion to the extent of 7 per cent. with manure alone and almost 30 per cent. where lime and fertilizer are used in addition. Since these figures are representative of the entire Piedmont Plateau, the important dairying section, and include pastures of almost every conceivable state of fertility and management, it quite definitely establishes the need for improved pasture management.

Conclusions

From the analysis of the results of the 1934 survey we come to the following conclusions regarding the management of Maryland Permanent pastures.

1. Lime and phosphorus are the two materials which are most needed for the improvement of permanent pastures and are best applied in the early fall.

2. Over grazing is to be avoided, especially in the late fall and winter when the grass can make but little growth. Moderately heavy grazing is beneficial especially in the late fall and winter when the grass can make but little growth. Moderately heavy grazing is beneficial especially where brush encroaches. Grazing the year around should be discouraged.

3. Pastures should be mowed at least twice a year; once in June for summer annuals such as white top and daisy, and again in the fall for ragweed and fall blooming biennials and perennials. Mowing at the right time will prevent much seed formation and will keep pastures cleaner.

4. An aid to pasture improvement is to divide the field into two parts and graze them alternately. During the rest period the droppings should be scattered with a chain or drag harrow. This will promote better grass growth and more even and uniform grazing.

5. Manure *alone* can be used to better advantage on crop land than on pasture. With the addition of superphosphate, however, it is much more beneficial for pastures when used alone.

THE 1935 REPORT OF THE SECRETARY-TREASURER

The Maryland State Corn and Potato Show was held at the Lord Baltimore Hotel. Although Maryland farmers had suffered much damage by drought and storms, and many of the usual exhibitors failed to show corn on this account, the Corn Show was about as large as usual and the quality of the exhibits was excellent.

The number of entries were as follows: I—Reid's Yellow Dent, 21; II—Golden Queen, 23; III—Lancaster County Sure Crop, 7; IV—Other Yellow Corn, 8; V—White Cap, 5; VI—Boone and Johnson County White, 16; VII—Seed Corn Growers' Display, 10; VIII—Interstate Class, 2; and IX—Certified Wheat, 8. There were 92 entries of corn and 8 of certified seed wheat, making a total of 100 entries.

The Corn Show was judged by Professor George Schuster of Delaware University and Professor Geary Eppley of the University of Maryland.

The following are winners of the first place in each class of corn and one class of wheat.

Class I—Tobias Zimmerman, Frederick.
Class II—D. S. Warehime, Route 2, Westminster.
Class III—Eleanor Galt, Westminster.
Class IV—Roger Burtner, Keedysville.
Class V—J. Brooks Ward, Jarrettsville.
Class VI—Fred C. Jones, Darlington.
Class VII—Tobias Zimmerman, Frederick.

Class VIII—Interstate Class, winner of trophy, John S. Ward, Hamilton, Virginia.

Class IX—A. G. Ensor, Forest Hill.

The Sweepstakes Ribbon for Maryland Corn was won by Tobias Zimmerman.

TREASURER'S REPORT, MARYLAND CROP IMPROVEMENT ASSOCIATION

January 1, 1934, to December 31, 1934

RECEIPTS:	
Book balance January 1, 1933	$ 61.25
Appropriation from Agricultural Society	138.00
Dues paid by members	11.00
Dues taken out of awards	30.00
	$240.25
EXPENDITURES:	
Maryland Farm Bureau dues	$ 20.00
Awards	77.00
W. R. Ballard, awards for Vegetable Show	30.00
Dues taken out of awards	30.00
Return for dues paid and also taken from award	1.00
Tax on checks	.96
CASH IN BANK, December 31, 1934	81.29
	$240.25

BALTIMORE, MD., January 10, 1935.

I, the undersigned, have examined the books of the Treasurer of the Maryland Crop Improvement Association and have found them to be correct.

Auditing Committee,
H. M. CARROLL, *Chairman.*

BUSINESS MEETING

The following officers were elected at the business meeting held at the close of the meeting on Thursday morning:

President	Walter Warehime, Westminster
Vice-President	Matthew Harding, Cambridge
Secretary-Treasurer	F. W. Oldenburg, College Park

The president represents the Society on the Board of Directors of the State Farm Bureau Federation. Daniel Pearce of Sparks was elected to represent the Society on the Board of Directors of the Agricultural Corporation of Maryland.

A motion was passed, directing the president to appoint the following committees. The purpose of the committees is to cooperate with the officers in an effort to improve the work of the Society; enlarge its membership and encourage larger attendance at the meetings, and at the Corn Show:

1. Corn Show Committee.
2. Corn Improvement Committee.
3. Seed Certification Committee.
4. Hay and Pasture Committee.
5. Fertilizer Committee.

REPORT

OF THE

TWENTY-SIXTH ANNUAL MEETING

OF THE

Maryland State Beekeepers' Association

Lord Baltimore Hotel
January 9, 1935
Baltimore, Maryland

The Twenty-sixth Annual Meeting of the Maryland State Beekeepers' Association was held on Wednesday, January 9, 1935, in conjunction with the Maryland Agricultural Society-Maryland Farm Bureau Federation meetings in the Lord Baltimore Hotel, in Baltimore.

The meeting was called to order by President S. R. Damon at 8.20 P. M. Minutes of the previous meeting were read and approved. An auditing committee, composed of Mr. Smith, Mr. Johnson and Mr. Kelly was appointed and the financial report was approved. Election of officers was postponed until the next meeting.

Dr. Damon briefly reviewed the activities of the Association during 1934. He called attention to the meetings held and the preliminary organization work done with regard to establishment of county chapters of the Association. Attention was called to the time and thought given the bee disease problem, the work of the Foulbrood Committee, and the request to the State Legislature for an appropriation to carry on inspection work more intensively. Dr. Damon concluded with thanks to the staff of the U. S. Bee Culture Laboratory for their help and cooperation during the year.

Dr. C. E. Burnside continued the program with a talk entitled, "Plant Poisoning of Bees and Brood," in which he pointed out the important known poisonous honey sources, and indicated that other plants now overlooked may contribute to bee poisoning. Considerable discussion followed in regard to honeys poisonous to man.

Dr. Lloyd M. Bertholf gave an interesting illustrated lecture entitled, "Karl V. Frisch and His Work With Bees." Mr. Bertholf told of his experiences while working under V. Frisch in Germany and concluded with some interesting notes concerning research being done on the behavior of bees.

Mr. Norris James concluded the program with a talk entitled, "Comb Honey Production." Mr. James outlined the essentials to successful comb honey production and discussed his method of supering.

The meeting adjourned at 11.20 P. M.

Financial Statement
January 9, 1935

Balance on hand January 10, 1934		$29.57
Dues received	$35.00	
Subscriptions received and banked	3.00	
		38.00
		$67.57
Expenditures (by check):		
Two subscriptions to "Gleanings"	$1.00	
Four subscriptions to "American Bee Journal"	2.00	
1933 dues to Farm Bureau	20.00	
American Honey Institute	5.00	
Bank taxes	.08	
	$28.08	
By money order:		
To E. F. Anderson for trip to meeting	7.50	
		35.58
Balance January 9, 1935		$31.99
($7.00 on hand)		

REPORT OF EXTENSION ACTIVITIES IN APICULTURE FOR 1934

By GEORGE J. ABRAMS
Specialist in Apiculture

The work in extension apiculture followed closely the program pursued during 1933. Increased time over previous years was allocated to the disease problem and to work with the Maryland State Beekeepers' Association. Educational work received the same attention given this phase of the program in former years, and, as in 1933, the work done with the Maryland fruit growers and in honey marketing and publicity was curtailed, travel money formerly used in these phases of the work being used for increased activity in combatting the disease problem.

Educational Work

The greatest need of the Maryland beekeeper is instruction in the fundamentals of apiary practices and management and the preparation of honey for the market and, as has been pointed out in previous apicultural reports, this instruction can be given most intelligently through personal, individual instruction in the apiary. The educational work for the year, therefore, was planned to comply with both this need and this manner of instruction.

Specifically, the following fundamentals were emphasized: (1) Value of good queens; (2) Necessity of movable frame hives; (3) Efficiency of the two-story brood chamber; (4) Necessity of eliminating disease; (5) Value of keeping accurate record books; (6) Winter preparation and spring management; and (7) Value of properly grading and packaging honey. To this list might be added other phases of bee culture in which instruction was given when needed, but in the main the fundamentals listed were given the most attention because of their basic importance. A word about each.

The value of young, vigorous queens from good stock cannot be overestimated. One of the commonest faults to be found with Maryland beekeeping is the prevalence of unsatisfactory queens. For the most part, young queens are provided naturally either by swarming or supercedure, or with the help of the beekeeper by manipulation of frames or queen cells. Where these methods of requeening have been allowed or practiced, hybrid strains have developed which have no place in modern beekeeping. In the majority of the apiaries visited, it was recommended that colonies be requeened with new pure bred stock from reliable commercial queen breeders. Both Italian and, in some cases, Caucasian races were recommended. An encouraging number of beekeepers either requeened this year or expected to obtain new stock in the spring.

A surprising number of colonies are still maintained in home-made box hives. With very few exceptions these home-made hives do not have frames that can be removed and examined. Hives without removable frames have no place in modern bee culture for two reasons; first, the beekeeper lacks the control over the colony's activity necessary to profitable honey production, and, second, the hives cannot be inspected for disease and, therefore, often become a menace to the community. In all cases where box hives were found it was strongly recommended that the colonies be transferred to modern movable frame hives. Some success was achieved this year in the elimination of box hives and a number of beekeepers have indicated that transfers will be made during 1935 with the help of the extension worker. Because of the cost of standard machine-cut equipment, progress along this line will no doubt be delayed somewhat, even where the best of intentions exist.

Result demonstrations in other States have shown conclusively the superiority of the two-story hive (where standard ten-frame hives are used) for wintering and spring development over the single story hive. With the average beekeeper, at least, greater success is attained with the two-story hive than with the single. In all cases where the single hive was in use the two-story hive was recommended and instruction in management based on two-brood chambers was given. Considerable progress was made in effecting this change in a number of apiaries. In some cases the beekeeper agreed only to try the two-story system in a part of his apiary. However, in most small apiaries a complete change was effected. The biggest hindrance to this project is the lack of sufficient equipment, but in several cases this was gotten around by doubling up colonies.

The disease situation which is discussed elsewhere in this report was given increased attention this year. The programs at several beekeepers' meetings were devoted entirely to discussions of bee diseases. Particular attention was given to training in diagnosis, using diseased combs for teaching material. At nearly all apiaries visited the disease problem was discussed and in cases where disease was found it was ascertained before the extension worker left, as far as possible, that the beekeeper could recognize disease and thoroughly understood the method of dealing with diseased colonies.

At the present time it is almost a certainty that not a single beekeeper in Maryland knows at the end of a year how much it costs him to operate his apiary. This is probably true of the vast majority of the beekeepers in other States. As a help in maintaining accurate business records, a mimeographed series of sheets for the recording of time, labor and cash expenditures and cash income was devised and used for the second year during 1934. It is hoped that with the cooperation of a relatively few beekeepers using these sheets that a simple and worthwhile record sheet can be developed which will be generally accepted and used in Maryland.

Instruction in colony manipulation and apiary management was given in the apiary. Particular attention was given to instruction in the proper method of winter preparation of colonies for the reason that winter mortality annually accounts for more colony loss than all other causes combined. Spring management, swarm control, supering and other problems received the attention each individual case necessitated. Beekeepers were eager to discuss these phases of their work and in many cases expressed the thought that has guided the educational part of this extension work, namely, that there is no adequate substitute for individual instruction in learning how to keep bees profitably.

Cursory investigations of the honey market in the smaller towns and along the roadside and examinations of the honey offered for sale by individual beekeepers has shown that much progress must be made toward grading and packaging Maryland honey. To this end, beekeepers were instructed and urged to grade all honey offered for sale according to the standards set by the U. S. Department of Agriculture, and to pay particular attention to the packaging and display of their product. This is particularly necessary if Maryland honey is to compete with any degree of success with the high quality honey sold on the Washington and Baltimore markets and with the imported honeys of inferior pack and low price offered in the western counties.

It is regretted that in pursuing this educational program, it was not possible to organize and carry out result demonstrations in colony management. This, however, will be included during 1935.

It has been the aim of the extension worker to extend extension work to as many new beekeepers as possible each year. During 1934 one hundred and twenty-seven new, personal contacts were made with beekeepers.

In addition to the personal visits made, twelve beekeepers' meetings were attended and two radio talks were given over Station WBAL, Baltimore.

Disease Control and Inspections

Inspection work, which was carried on more vigorously this year than in any previous year, showed American foulbrood present in the following eight counties: Queen Anne's, Caroline, Harford, Baltimore, Howard, Prince George's, Montgomery and Washington. American foulbrood has been located in these counties in previous years and has persisted in spite of the eradication work done in the past. Because of lack of funds and the physical impossibility of one man carrying on the work satisfactorily alone, the area clean-up campaigns planned for several counties were abandoned. However, in Baltimore and Prince George's counties several areas with numerous small apiaries were thoroughly inspected.

When disease was found, the apiary operator was thoroughly grounded in the method of diagnosis and treatment. At all times fumigation at night and burning was advised. In only one case was the "shaking" method of treatment used and in this case every colony in the apiary was treated in this manner and a reinspection failed to show disease carried over.

The burning method of American foulbrood control has received little or no opposition in Maryland. The few beekeepers who in previous years desired to treat by "shaking" have abandoned this method in favor of burning.

Only one beekeeper was encountered who would not allow a thorough inspection and clean-up of his apiary. However, this beekeeper has finally agreed to cooperate with the inspector in cleaning up his diseased colonies and equipment.

Following is a summary of the inspection work for the year:

Number of colonies inspected	1518
Number of apiaries inspected	122
Number of colonies diseased	51
Number of apiaries diseased	18
Per cent. of colonies diseased	3.3
Per cent. of apiaries diseased	14.7

What appears to be a serious outbreak of the bee louse (Braula caeca) was located in Montgomery County in the area north of Rockville and west of the Frederick-Washington Pike. Six apiaries in this area were found infested. This infestation will be watched closely during 1935.

As indicated elsewhere in this report, considerable educational work was done in familiarizing the beekeeper with the cause, symptoms and manner of treatment of American foulbrood. Several beekeepers' meetings were devoted to a study of this disease, microscopes being provided for microscopic examinations of diseased material and study of the causative organism. Diseased frames were used for gross diagnosis and illustrated lectures were given on diagnosis and control.

Orchard Pollination

The work with the Maryland orchardists was curtailed during 1934 for two reasons; first, it was believed that the majority of orchardists not using bees for pollination would be hard to interest in a new venture at this time, when every economy is being practiced, and second, it was necessary to allocate an larger amount of travel money to disease education work than in former years. However, in spite of the reduced work in orchard pollination, a number of fruit growers were helped. The work was limited to those requesting aid.

In two large commercial orchards, capable apiary managers were secured and trained to operate the fruit growers' apiaries.

Considerable time was spent in helping beekeepers adjacent to fruit-growing areas in building up apiaries large enough to be of value to fruit growers who will want to rent bee colonies in the future.

One radio talk was given in which the value of honey bees as cross-pollenizers of fruit blossoms was stressed.

Honey Marketing and Publicity

An effort was made to stimulate interest in Maryland honey. National Honey Week was observed with a number of beekeepers setting up special displays of honey and bees in retail stores and elsewhere. This Honey Week program has become a part of the yearly program of a number of beekeepers. As it was felt that no travel money could be used this year in stimulating renewed interest in Honey Week, no trips were made in its interest. However, beekeepers were urged by letter to exhibit bees and honey and many excellent exhibits were set up.

At the Timonium Fair an exceptionally fine exhibition of honey was displayed through the cooperation of the Maryland beekeepers. This exhibit attracted much attention. It was larger, better arranged and the competition for prizes keener than in former years. Honey exhibits were also arranged at the Harford County Fair in Bel Air, and at the Kent-Sussex Fair at Harrington, Delaware. (The Maryland interest in the Kent-Sussex Fair is due to the opportunity given to Maryland beekeepers to compete for prizes and the large Maryland attendance.)

One radio talk was given prior to National Honey Week, in which the production and value of honey was discussed.

At nearly all visits to beekeepers some time was spent in discussing the grading, packaging and marketing of honey. Adherence to United States Standards and Grades for honey was always stressed. A number of contacts were made for beekeepers with outlets for their product. One large bakery was contacted and a large year-round market secured for beekeepers with a surplus of honey above their retail needs.

Work With the Maryland Beekeepers' Association

During the year twelve meetings of the Maryland State Beekeepers' Association were held. Seven meetings were held in Baltimore, one in Easton, two in Frederick and two in Hagerstown. An Eastern Shore chapter of the Association was organized at the Easton meeting. It was planned to organize chapters in Hagerstown and Frederick, but it was felt by the local beekeepers that it would be better to organize in the spring (1935) when larger and more representative attendance would be secured.

Apicultural Survey

A large amount of information regarding Maryland beekeeping was gathered on visits to beekeepers, at meetings, and by letter and questionnaires, which is to be used in the preparation of a general bulletin pertaining to bee culture in Maryland.

The following figures, obtained from a questionnaire sent to all known beekeepers, are based on 180 returns:

State Totals, Averages and Per Cents. for 1933-1934

Number of colonies starting winter 1933-1934	3,858
Number of colonies winter killed 1933-1934	1,185
Per cent. winter kill	30.7
Increase made during 1934	812
Total honey production, 1934	86,975 lbs.
Extracted	40,718 lbs.
Comb	46,257 lbs.
Per cent. extracted	46.81+
Per cent. comb	53.18+
Average honey produced per colony	32 lbs.

PLANT POISONING OF BEES AND BROOD

By C. E. BURNSIDE

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Beekeepers in widely separated sections of the United States occasionally suffer heavy losses of bees and brood from undetermined causes. A few of these cases have been investigated in the field, and many samples of the dead bees and brood have been examined at the Federal Bee Culture Laboratory. The known diseases of bees were absent, and no abnormal conditions were detected that could account for an excessive death rate. The absence of sufficient arsenic to cause death also showed that the trouble was not caused by spray poisoning.

For many years we were without a satisfactory explanation as to the cause of these sporadic outbreaks of heavy losses of bees or brood. It was often suspected that serious diseases of both bees and brood existed which had not yet been recognized. Within recent years new diseases of both bees and brood have been discovered, but it is evident that none of these cause the heavy losses that occur from time to time in several sections of this country. In fact, every attempt to transmit these disturbances by inoculating the bees or brood has failed.

It now appears that the real cause has long been overlooked. In the bee journals of the seventies and eighties there are several reports of bees gathering poisonous honey. There are also reports in beekeeping literature alluding to the possibility of bees being killed by poisonous substances present in the nectar or pollen of certain plants. Several years ago many beekeepers of California suspected that honey from California buckeye (*Aesculus californica*) was poisonous for bees. It was not generally accepted, however, that heavy losses of bees are sometimes caused by plant poisoning until 1925 and 1926, when Vansell published his preliminary reports on buckeye poisoning.[1,2] Vansell's observations on the serious effect of buckeye poisoning on brood and colonies have been verified, and it seems to be definitely established that colonies may be seriously weakened or killed by buckeye poisoning.

During the spring of 1932, R. E. Foster and the writer, assisted by A. B. Hamlin, studied a disturbance of brood which had destroyed many entire apiaries in Western Florida.[3] The trouble was finally traced to the freshly gathered honey, which evidently contained a poisonous substance. No spraying was being done anywhere in the locality at the time the trouble occurred. Owing to the great extent of the affected territory and the large amount of this honey that was gathered, it must have come from one or more plant species in that locality. Lack of time prevented definite identification of the plant or plants from which this honey was gathered. Although brood was killed in all stages of development, adult bees were not noticeably affected. Death of colonies was caused by continued loss of brood. The honey was also reguarly used on the table by people of that locality without unfavorable effects ever having been reported.

During the summer of 1932 Vansell and Watkins studied in the Sierra Mountains of California what they believe was plant poisoning of adult worker bees.[4] The mortality among adult field bees was extremely high while they were in the field and also after they had returned to the hives. The brood was not noticeably affected. A search revealed both black and

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[1] Vansell, G. H. Buckeye poisoning of the honey bee in California. Amer. Bee Jour., 65: 575-578. 1925.

[2] Vansell, G. H. Buckeye poisoning of the honey bee. Calif. Agr. Expt. Sta. Circ. 301. 12 pp. 1926.

[3] Burnside, C. E., and Foster, R. E. Plant poisoning of brood of bees. Gleanings Bee Cult. 61: 470-473. 1933.

[4] Vansell, G. H., and Watkins, W. G. A plant poisonous to adult bees. Jour. Econ. Ent. 26: 168-170. 1933.

yellow bees dead and dying upon blossoms of western false-hellebore, also known as corn lily (*Veratrum californicum*). This fact, together with other evidence that was obtained, indicates that the bees were poisoned by nectar from this plant.

For several years beekeepers have suspected that bees are sometimes poisoned by nectar from loco plants (*Astragalus*) in some of the Western States. Beekeepers observed that when working these plants many bees died in the field and others, after returning from the field, died near the entrances or within the hives. In the spring of 1933 Vansell and Watkins found worker bees dying upon the blossoms of spotted loco (*Astragalus lentiginosus*) in Nevada, where many colonies have been killed by sporadic outbreaks of a mysterious disturbance of adult bees.[5] The death rate was not excessive during 1933, however, and the brood was not noticeably affected, but in previous years while bees were working spotted loco the death rate among adult bees was so high that many colonies were destroyed. This indicates that nectar from spotted loco may at times contain a substance that is poisonous to adult bees.

There is considerable evidence that many other similar cases of plant poisoning of both brood and adult bees have occurred in different sections of the United States. Samples of brood and of bees that died abnormally and yet were not affected by any of the known disturbances of bees have been received from many different States for examination at the Bee Culture Laboratory. A laboratory examination of the adult bees was of little value beyond eliminating the known diseases of adult bees, but in most of the samples of brood the dead larvae and pupae showed symptoms very similar to those of brood killed by plant poisoning in Western Florida. The reports made by the beekeepers who supplied these samples strongly point to plant poisoning as the cause of the trouble in both brood and bees.

The following reports are taken from letters of beekeepers concerning their observations on what appears to be plant poisoning of bees or brood in their localities. Only small parts of these letters are included, but they show something of the seriousness and the wide distribution of these sporadic losses which for many years have remained a mystery.

1. California—I want to know if the recent eclipse of the sun had anything to do with the condition of our bees, which was a kind of paralysis. Old and young, strong and weak were affected. Young bees would almost hatch out and die before getting out of the cells. There has not been much laying of eggs by the queen bee, either, since this condition began. Old bees die in the field and in front of the hive.

2. California—On May 1 a storm came up lasting for three days, which kept the bees from flying during that time. On the fourth day the weather cleared off nicely and the bees rushed into the field; then it suddenly turned cool and rained. The next day the bees were noticed

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[5] Vansell, G. H., and Watkins, W. G. Adult bees found dying on spotted loco. Jour. Econ. Ent. 27: 635-637, illus. 1934.

clustering on the hive entrance in an apparently dazed, dopy condition, and the succeeding day the ground in front of the hives was covered with dead and dying bees. This condition has continued in these apiaries ever since, seriously depleting the colonies, with as high as 90 per cent. of the adult bees being lost in some cases.

3. Utah—The bees act as though they might be drugged. They show an inability to handle themselves properly. They are able to fly only a short distance, when they fall to the ground and are unable to rise again. Large numbers of them die. It seems that when they are removed from the districts where loco weed is prevalent the trouble is overcome.

4. Arizona—We have a condition affecting the bees in certain mountainous sections of Arizona that the bee men think is loco weed poisoning. This apparently affects the adult bees and also the larval and pupal stages. I am sending you under separate cover some of the dead brood from the affected colonies, and I would like to know if you are able to determine if this is poisoning from some plant or if it is a disease of some kind.

5. Nebraska—The bees that were dead and dying were scattered quite evenly about the entire yard as if all the hives were affected. After examining all the brood in each hive I was unable to find any disturbance regarding the brood.

6. Nebraska—We have just noticed that the ground around the hives is almost covered with dead bees, while here and there I notice one crawling about and others just dying, some having pollen still on their legs. I believe they are being poisoned in some way. If so, would there be any danger of poison in the honey?

7. Florida—In May a year ago I had 302 hives of bees in that part of Florida. Some died during 1931; I do not know just how many. Roughly speaking, I would say about 50-60 hives. The bees in the best locations have practically all died. Of the 302 hives there are about 66 hives that still have bees in them. I doubt if half of these will recover.

8. Georgia—This trouble is much more serious than I knew at the time the sample was sent. In many cases half the brood is dead and in some about three-fourths is dead. In a few cases in some frames nearly all the brood is dead. I have seen the bees in some hives just swarm out and leave. In so far as I can see, it has no resemblance to the poison brood I have had nor the foulbrood. Yet the bees are dead and it seems to be the brood after being coiled and just before hatching.

9. Virginia—Whole frames of brood die and the bees clean house. The queen doesn't lay very much, if any. Sometimes the young bees are brought out alive, but have no wings. . . . When a hive is this way, it is dead as soon as the old bees have died, for they never raise any more young bees, for they all die before they hatch and after they are capped. I never saw a coiled or extended larva dead, but only those in capped cells with the brood almost ready to hatch. The whole country about here

is served the same way. I know of at least 150 colonies that have died this year.

10. Texas—Again we are having a recurrence of the trouble with our bees dying as though they were poisoned, which occurs here at this time of the year only. At first only a few hives are affected, but in the course of a week the whole apiary is affected. Some years, like last, we lost 80 per cent. of our colonies, and at other times when it is not so bad we lose only a few colonies, but it leaves many colonies very weak in bees and many succumb to moths unless they are soon cared for. When first noticed, the adult bees are seen to crawl out of the hives or fall to the ground when returning from the fields. They seem to hop around on the ground unable to fly and thus die in a few minutes. Their bodies are of normal size, not distended, the honey sacs about half full (the contents sometimes look a little cloudy), the feces are soft and dark green-brown in color. Most of the adult bees die in the course of a few days and we then find the brood dead too. When a comb is cut across, it smells like sour corn mash. I lost 200 colonies last year.

11. Texas—I find that bees die over a territory, including the counties of Jim Wells, Duval, Live Oak, and probably others, from apparently the same trouble that I have. Mr. Jul Buegler, a bee man who has lived in Jim Wells County at Alice, says that he has experienced the same trouble with his bees three times in ten years. He says that whenever we have rains in August, or the latter part of July, the bees will soon begin to die, presumably from some poisonous honey plant. Last year the trouble developed in three of my apiaries in Duval County about the 15th of August. There had been rains ten days before and a light honey flow came on. I could not find them working on any unusual plant, but it is possible that I missed the troublesome plant. Our bees had been weak from the late freeze last spring, which killed many of our honey plants, but we kept the bees alive by feeding sugar until they began to die about the 15th of August. By the 10th of September we had lost 80 per cent. of our bees. At times we have found bees that were returning from the fields, loaded with honey, falling to the ground and dying a distance of 200 yards from the hive. Some of the colonies affected had young bees that were trying to emerge from the cells, but were stuck and could not get out; others that did emerge had deformed wings.

Within the past two or three years cases that appear to be of a similar nature have occurred in other States, including Maryland, New York and Michigan.

In some localities the disorder returns nearly every year, but the amount of the losses varies widely from year to year. In other localities losses occur only at irregular and infrequent intervals, with several years intervening between outbreaks. In most cases the heaviest losses have occurred during or following seasons of drought, and occasionally very heavy losses followed seasons of late frosts. The full significance of these facts remains to be determined. Just what the conditions are which cause such extreme variation from year to year presents an interesting problem. It is also interesting to note that in some cases only the adult bees, in others only the brood, are affected, whereas in still others both the bees and the brood are killed.

The question has frequently been raised as to whether or not honey from colonies affected by plant poisoning is safe for human food. This question is answered by the fact that honey from affected colonies has been used regularly on the table without a single case of unfavorable effects having been reported. Apparently beekeepers have nothing to fear in this connection.

PROFESSOR KARL V. FRISCH AND HIS WORK WITH BEES

By LLOYD M. BERTHOLF
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I feel that I may be simply imposing on your good nature here this evening by bringing into this otherwise fine program some of the observations from my year spent in Germany, which is now four years ago—it doesn't seem possible that so much time has elapsed since that wonderful year, but it must be true. I am sure that if I were scheduled to talk on the political life of Germany as I observed it four years ago, no one would have the slighest interest in what I would have to say, in view of the enormous changes that have taken place there since then. But since the honey bee does not change her way of life as rapidly as man changes his political complexion, it may be that four-year-old observations in this realm are not entirely out of date.

I have already indicated that the year over there was a wonderful experience. We arrived in the fall of the year after traveling through Ireland, Scotland and England, and attending the meeting of the International Apis Club in London in September. This meeting, I may say in passing, was held in connection with the British Show of Bees and Honey in the great Crystal Palace, which Queen Victoria once said she was afraid the English might confuse with the Kingdom of God, it is so enormous and magnificent. Here we met such well-known people in the world of bees as Miss Annie Betts of England, Dr. John Anderson of Scotland, M. Baldensperger of France, Dr. Freudenstein of Germany, Dr. Sondek of Czechoslovakia, Dr. Kretchy of Austria, and Dr. De Boer of Holland, and Dr. Stitz of Hungary.

After arriving in Munich there was not much opportunity to see anything of German beekeeping over the winter, but in the spring we began to take trips into the surrounding country and finally took a rather extended trip into Italy, returning by way of Switzerland, where we stopped and visited the laboratory of Dr. Morgenthaler in Berne. Then in the early summer we made a tour through the northern part of Germany and Holland, visiting the laboratory of Dr. Zander at Erlangen, of Dr. Freudenstein at Marburg, and of Dr. Armbuster at Berlin.

But now for the Zoological Institute of the University of Munich and its director, Professor Karl V. Frisch. At the present time the Institute occupies spacious new quarters in a building built especially for that purpose by a quarter million or so of Rockefeller dollars plus and an equal amount of good German marks. But at that time it occupied one of the oldest buildings in a city of old buildings. This particular structure was a wing of an old monastery, put up in the sixteenth century as a part of the St. Michael's Church. The church and cloister now occupy only about one-eighth perhaps of the whole building, and the rest is given over to various museums and scientific laboratories, among them the "Zoologisches Institut." The whole interior gives off, as it were, the very aroma of sixteenth century monastic life—beautifully arched ceilings, tall narrow windows, great iron door locks and handles. At first glance the equipment appeared somewhat meager and down-at-the-heel, but one soon discovered that that was only true in respect to furniture. Stuck around in some cupboard somewhere was probably every kind of apparatus you might need, and at your beck and call were two excellent "preparators" who could make almost any article out of wood, sheet metal, or glass that you could design. In the main lecture hall you sat on hard benches with straight board backs or no backs at all, but the room was equipped with four kinds of projectors—movie, micro, slide and opaque—it was literally lined with charts and diagrams, and was so equipped for darkening that at the touch of a button on the desk, all shades were drawn as if by magic and the room became so dark you couldn't see your neighboring seatmate. And museum! My, what a glorious collection of prepared mounts illustrating this or that principle of zoology, especially comparative anatomy, with a man to keep it constantly in order and continually growing with new preparations.

The faculty of the institute consisted of several graduate assistants, four instructors, one associate professor, one professor emeritus, Dr. Richard Hertwig, and one professor, Dr. Karl V. Frisch. Professor V. Frisch is a man that everybody loves. A man small of stature, quiet, solemn, erect, walking with a rapid, somewhat stiff gait, turning his head neither to the right nor the left as he goes unless addressed by someone, in which case he turns quickly and his face lights up with a smile of recognition; always busy, but never fussed as he hurries from one thing to another—now making observations on a bowl of fish, now directing his assistants in the making of a piece of apparatus; now having a conference with a representative of some firm; now dictating letters; now writing; now lecturing; now out in the yard getting a report from a student working with bees; now making a painstaking dissection on the ear of a fish; now meeting some distinguished visitor. Everywhere he goes among his students and assistants there is the almost military straightening up to attention on their part, a fine exhibition of the usual German politeness and deference to one of such high rank as a professor holds in Germany.

But, while dignified, he is not dogmatic or autocratic. In fact, at the annual masquerade party of the institute he appeared in a school-boy's outfit that just about set the crowd into hysterics, and all through the evening he was the life of the party. He can also play the hospitable host as on the occasion when he and his charming wife entertained the entire institute force at a garden party at their lovely suburban home.

But I promised to tell you something about his researches with bees. He seems to have first burst into renown with his famous paper of 1914 on "Der Farbensinn und Formensinn der Biene." This paper has come to be a classic example of high-class research—experiments thoughtfully planned and repeated again and again, abundant readings taken and all fully recorded, critical analysis of the results to see what the possible interpretations are, and adequate checking by further experiments to see which interpretation is correct. These attitudes have characterized all of Professor Frisch's experiments. This particular paper came out at a time when another Munich investigator, Carl von Hess, was arriving at opposite conclusions by means of an enormous number of not-too-carefully done experiments. Von Hess was concluding, just as the Frenchman Plateau had done some years before, that insects are color blind, and therefore that flower colors have no biological significance. Von Frisch concluded that bees do see chromas, but only two main ones, yellow-orange and blue-violet, being blind to red and green, like a red-green blind human being. Well, that piece of research marked the beginning of a great series of researches by von Frisch and his students on the senses of bees.

Every discovery opens a dozen new problems. For instance, in connection with his experiments in chroma vision, Von Frisch also worked on the sense of form. He found that bees can distinguish a gentian shaped figure from a sunflower-shaped one, but cannot distinguish a large square from a triangle and probably not a checkerboard from a striped pattern or other unnatural figures. Well, this led to the question of other flower figures, and especially of other unnatural figures—large polka-dots, small polka-dots, large and small checkers, wide and narrow striped figures placed above the hive opening, figures placed below or to the sides, until the subject has become so enormously complex that only the research workers in that particular field attempt to follow it.

Von Frisch's next big problem was the sense of smell in bees. He trained bees to get honey from a box containing one odor and then tried to confuse them by moving the boxes around to see if they would seek out the box containing that same odor again. In general he found a very distinct sense of smell, provided the odors were those occurring within the range of the bees possible experience in nature. Unnatural odors were not readily distinguished.

Next he attacked the problem of the sense of taste in bees. What sorts of sugars do they taste, and in what concentrations? What things bitter to us seem to be distasteful also to bees. How about salt? The results showed that, as far as sweet is concerned, bees are considerably different from human beings: they taste apparently only about six substances as sweet, all of them real sugars, most of them very common and occurring in nectar, this in contrast to the 25 or 30 substances tasting sweet to us, not only real sugars but artificial sweets like saccharine. When cane sugar is diluted it seems to lose its attraction for bees, at a considerably greater concentration than it does for man—the bees seem less sensitive here also. In regard to sour, salt, and bitter they seem to distinguish each of these tastes, but to be somewhat less sensitive than we are in these respects.

In 1922 Von Frisch became interested in the question as to how bees communicate with each other, and as a result observed the now well-known nectar-dance and pollen-dance. He was not, of course, the first to observe these reactions, but probably the first to recognize their significance.

One of the most interesting of the researches which Von Frisch has directed is that concerning the sense of time in bees. The latest of these is by Wahl, who worked in the laboratory while I was there. It has been shown that bees can be trained to come for food at any particular time of day desired; that they can be trained to come any number of times a day provided at least two hours elapse between feeding periods; that they may even be trained to go to two different places for food, one at one time of day, the other at another; that the memory of time lasts over 6-8 days, as for example over a rainy period; that there is, however, a basic 24-hour rhythm which cannot be set aside—they cannot be trained to come every other day, for example; that this rhythm continues in the dark, within the depths of a salt mine, and under all other conditions tried, that it is not a hunger-rhythm; that it is inherited by bees who have grown from the egg in complete darkness or where no daily rhythm has been followed.

Von Frisch and his students have also been much concerned with the problem of orientation by bees. How do they find their way home? The results of experiments have shown that they use first of all their eyes to note any obviously distinguishing characteristic about the hive or its surroundings; that in close proximity to the hive they use their sense of smell to get into the right hive; that if there are no trees or buildings or other identifying marks in the vicinity of a hive they use the direction of the sun's rays as a compass in leading them back to the hive; and that they have a rather accurate sense of distance, so that if they do not find their hive after flying in a straight line for the correct distance, they do not continue on in the same direction, but begin to circle around to search the neighborhood.

One of the best known of the more recent researches coming out of Von Frisch's laboratory is that by Rosch on the division of labor in the beehive. He found, as you doubtless all know, that for the first three days after emerging, the young bees clean out cells and keep brood warm; from the third to the fifth day they feed the younger larvae with salivary secretions; at about the tenth day they make their orientation flight and begin the work of taking nectar from field bees and putting it into cells, of packing pollen in cells, of building comb and cleaning out the hive. This period of household duties seems to end with their work as policewomen which they perform from the eighteenth to the twentieth day, after which they become field bees.

In reviewing these researches for you I have not by any means been able to cover the entire work of Von Frisch and his students, but only to tell of some that seem to be outstanding and particularly interesting to me. I do not wish to close, however, without mentioning the work of Werner Von Rhein, the man who sat at the laboratory table adjoining mine during my entire stay in Munich. Von Rhein's problem was the origin of the two types of females found in the bee colony, the worker type and the queen type. He consludes that the worker type is the original since it lacks only ovaries and spermatheca in being a complete female, while the queen is decidedly deficient in that she lacks a long tongue, wax glands, as well as some of the other glands of the worker, the pollen basket, the worker mandibles, and the various instincts of the worker that are necessary for self-preservation. He finds that the worker food and the queen food are qualitatively different even before the worker larva begins to get honey and pollen; that worker food is unsuited to a complete development of the queen and even royal jelly when used outside the hive in an incubator is not sufficient to make a queen. A young larva raised thus on royal jelly may develop to a giant worker, even with ovaries and spermatheca, but she is worker in mouth parts, in glands, in pollen basket, etc. The determination of a queen larva occurs in the hive as soon as it weighs 20 mg. and is complete when it has reached 150 mgs., and Von Rhein thinks this fixation of the queen characteristics is due to an unknown secretion added to the food by the workers, which loses its power very quickly so that by the time it is transferred to an incubator it has lost its potency. There are therefore three kinds of salivary gland food, all different, thinks Von Rhein:

The jelly fed to the workers,
the jelly fed to the young queen larva under 20 mg. in weight,
the jelly fed to older queen larva over 20 mg. in weight.

This research opens more problems than it settles, but that is usual with the first experiments of a series, and I predict that the fertile brain of Karl Von Frisch will soon divide up these problems and allocate them to different research students that soon we shall know what it is that makes a queen a queen and how it works. And whoever can find out how to make a queen in these days of flappers will certainly have made a real contribution to society.

COMB HONEY PRODUCTION

N. W. JAMES
Baldwin, Maryland

Mr. President, Ladies and Gentlemen:

It gives me great pleasure to speak on this most important and interesting subject.

In the first place I desire to say that the successful production of comb honey does not depend on any one great thing, but upon the close observation of many small things, or so called small things, which have a great amount of significance.

There are several problems that confront the comb honey industry. I think all will agree that locality plays a large part in the success or failure of this product, and that certain localities are not suited. During my first experience with bees I lived in a locality near a large pine woods. Under certain atmospheric conditions pine trees yield honey which granulates as soon as gathered. This for several years spoiled my crop. But in the locality where I now live I have not seen any pine honey. And then in the southern part of this State a friend of mine tried nine years to induce his bees to work in sections, but failed.

The season has much to do with our success or failure. There are seasons when a very poor beekeeper may produce fairly good comb honey and there are others when the most skilled apiarist would doubtless fail. One of these being in 1933. After doing my best I was ashamed of my crop on account of much of it being yellow and unattractive.

Another consideration is the strain of bees. Some years ago I purchased twenty queens from a dealer of good repute; none of the colonies headed by these queens would produce comb honey, although they were in a yard where other strains were doing fine work. There are also exceptional colonies among good strains, which fail to do good work in sections. These should be given extracting combs instead of allowing them to waste time during a good honey flow. So given a suitable locality, a good strain of bees and a fair season we turn to the manipulation of the colonies.

I do not believe one can learn to produce comb honey in one season, nor possibly in two or even three. A layman after listening to an excellent sermon by his pastor, said to the minister, "How long did it take you to get up that sermon?" "Forty years," was the answer. The layman was astonished beyond measure. "Yes," said the preacher, "I have been all my life learning the facts that went into that sermon." So I can say I have been all my life learning to produce honey like this sample. First, we must work to have good strong colonies at the beginning of the honey flow. To do this fall, winter and spring management are of vital importance. All my colonies are at the present time run with food chambers. That is either two-story or story and one-half hive. These food chambers are not removed either in the winter or summer. But during the honey flow they are often reversed from top to bottom in order to keep the brood instead of capped honey next to the sections. On top of these two stories is placed a queen excluder, and on this a shallow super of extracting combs. This is done at the beginning of the main honey flow, or a few days previous in case of warm weather. When this extracting super is about two-thirds full it is raised up and a super of sections put underneath with an inner cover placed between the two, the bee escape hole being left open and the queen excluder being taken away entirely. Work in the extracting super will go on slowly through this small hole, but the main force will go into the sections where a few drawn combs should be placed. Another super of sections can be added at any time, keeping the one extracting super on top, or removing it altogether, as work will go on in the sections either way. This super can be extracted or used as a food chamber on another hive. By this plan both comb and extracted honey can be produced on the same hive. As soon as the sections are capped they should be removed to prevent any discoloration.

This honey after being removed should be kept in a warm, dry room at about eighty degrees, and fumigated once a month with sulphur fumes or carbon bisulphide to destroy wax moth, ants or other insects. It should also be secure against robber bees.

Perhaps the best way to remove comb honey from the hive is by the bee escape method, but great care must be used to prevent robber bees from getting into this honey after the bees from the colony have passed down through the escape.

In preparing comb honey for market the sections should be scraped first, and then slid over sheets of sand paper. We use the cellophane wrapper with a border on both sides. The border hides the outside rows of cells and yet there is no deception, as the net weight can be stamped on the section. The sections are sorted and put up in three grades, according to weight and appearance. We use the corrugated paper shipping cases, which are becoming more popular each year and are less expensive than wood cases.

REPORT

OF THE

Maryland Vegetable Growers' Association

SIXTEENTH ANNUAL MEETING

First Session

Wednesday, January 9, 1935

Baltimore, Maryland

The sixteenth annual meeting of the Maryland Vegetable Growers' Association was called to order by President W. N. Eyler in its first session at 10 A. M. at the Lord Baltimore Hotel, Baltimore, Maryland.

President Eyler greeted the assembly, then introduced the first speaker, Dr. Wm. A. Frazier of the University of Maryland.

BEST VARIETIES OF VEGETABLES FOR MARYLAND CONDITIONS

WM. A. FRAZIER
University of Maryland

No attempt will be made here to convince you that there are certain "best" varieties of a given vegetable crop for Maryland conditions. Let us confine this discussion to the merits of particular varieties, some old, some new, which, because of these particular merits, appear at present to be the most promising that we could plant. Our recommendations must also be confined to those vegetable crops of major importance in the State, and upon which most of our experimental work has been done.

The most active field of investigational work in the vegetable industry today is the development of new varieties—particularly disease-resistant ones. You must realize, therefore, that the better varieties of the present will not be the better ones of tomorrow. A few years hence, it is likely that most of the varietal names which we mention today will be entirely unknown.

It is the present plan of the Maryland Agricultural Experiment Station to conduct tests of a few of the most promising varieties of our principal vegetable crops, to determine their yielding capacity and desirability for canning or for market. Such tests have now been conducted for one year on tomatoes, corn, string beans, and peas. In previous years, variety tests have been run, of course, on various crops, but in a more limited way.

The present work, under the supervision of the Department of Horticulture, and in cooperation with the Extension Service, Department of Agronomy, and Department of Plant Pathology, is being carried out at various locations in the State, particularly at College Park, Ridgely, Silver Run, and New Windsor.

Work in selecting more desirable varieties of vegetables is not only difficult because of the necessity of constantly discarding the old and inserting the new, but because often the tests of a given variety must be conducted over a series of years. The behavior of a variety within a locality may vary greatly, depending upon climatic conditions, and it is only fair that a variety, which shows exceptional promise, be subjected to a representative "sample" of years for a given location. Strains of a variety, developed by individuals, or seed companies, may vary as much in yielding capacity as do varieties themselves. It is, obviously, of great importance that you secure seed from reliable sources.

Tomatoes

Marglobe, the wilt-resistant tomato developed by the late Dr. F. J. Pritchard, of the United States Department of Agriculture, has been an outstanding variety in the tri-state area since 1927. Its high degree of resistance to wilt, long bearing season, good quality, and heavy yielding capacity place it at the top of the list. Many growers still prefer Bonny Best, which is earlier. Earliana is still grown to some extent. Pritchard is a good early type, resembling Marglobe in fruit shape, having a very good color, and yielding well. On light sandy soils at College Park, it has tended to produce a large number of fruits of rather small size. Let us list our most commonly grown varieties, from early to late, giving the approximate time from planting seed to harvest:

1. Earliana—90 days—not wilt-resistant nor a heavy yielder.
2. Break O'Day—95 days—wilt-resistant, but the plant has an open type of growth, permitting sunburn and poor color development.
3. Pritchard—95 days—see discussion above, wilt-resistant.
4. Bonny Best—100 days—still extensively grown by market gardeners. Not wilt-resistant.
5. Marglobe—100 days—highly recommended for main crop planting because of reasons stated above.
6. Greater Baltimore—105 days—a main variety grown in Maryland for canning. It has produced good yields for many years. Not wilt-resistant.

Peas

Most of those present are no doubt familiar with the effects which relatively high temperatures have on the growth of peas. Maturation is speeded up, and yields usually decrease with later plantings. The Alaska pea, of relatively poor quality, is not only earlier but better able to withstand the high temperatures which often prevail in Maryland at harvest time. For that reason, the canner has of necessity required Alaska type peas. Except for the cool, mountainous regions of the State, the production of such types as Perfection and Telephone has met with little success. Gradus, Blue Bantam, and Laxtonian, somewhat earlier, may often give fair yields. These varieties are not wilt-resistant, however, and variety tests of peas include only those "sweet" types which are wilt-resistant. Table I gives the varieties used in the 1934 trials. It is noted that four of these are Alaska strains. Rogers A, Wisconsin Early Sweet, and Gem, three small podded "sweet" types, yielded very well in 1934, as may be seen in the table. Climatic conditions, however, were exceptionally favorable for their development. Of the three, Wisconsin Early Sweet appears the most promising. It is a more homogeneous type than Rogers A, about five to seven days earlier than Gem, and not more than a day or two later than Alaska. It is possible that within the next few years a pea of high quality, suited to Maryland conditions, may largely replace the Alaska.

TABLE I

YIELDS OF PEA VARIETIES—1934

Variety	Yield in Pounds of Shelled Peas Per Acre	
	College Park*	Ridgely**
Rogers A	1,420	3,033
Wisconsin Early Sweet	1,920	2,888
Alaska Associated Strain 5	1,607	2,724
Maryland Alaska	1,430	2,722
Susceptible Alaska	1,481	2,286
Alaska HF 30-1	1,637	2,988
Gem	1,502	2,611

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*308 pounds differences in yield necessary to show significant differences between varieties.

**415 pounds differences in yield necessary to show significant differences between varieties. (Fisher's Analysis of Variance Method.)

Sweet Corn

Improvement of varieties of sweet corn is receiving a great deal of attention at the present time. Experiment Stations and seedsmen have been particularly interested in the behavior of hybrid corns. Some of these hybrids appear to have real merit, others do not. Table II, furnished me by Dr. Cordner, gives data on the varieties planted in our tests the past year. For an early, high quality, yellow corn we recommend Golden Cross Bantam. Although the marketable yield of husked ears is low compared to Stowells and Country Gentleman types, it was found that actual cut-off weights of this variety gave a higher total yield of cut corn than any variety in the test. It is noted that the marketable yield of Narrow Grain Evergreen Hybrid 26 x 15 is significantly higher than the common Narrow Grain Evergreen. The opinion is prevalent that Narrow Grain Hybrids have in general been very satisfactory. We can not recommend Country Gentleman Hybrid 9 x 19 over ordinary Country Gentleman. The

TABLE II

RESULTS OF VARIETY TRIAL OF SWEET CORN

(WEAVER FARM—1934)

Data Based on Plots 1/100 Acre Planted in Hills 3 x 4 Feet.	Top Cross Bantam	Golden Cross Bantam	Stowells Hybrid 14x5	Stowells Ever-green	Country Gentle-man	Count. Gentle-man Hybrid 9x19	Narrow Grain Ever. Hybrid 26x15	Narrow Grain Ever-Green	Difference Required*
A. TOTAL YIELD:									
1. Number of ears per plot............	106.5	113.0	100.0	101.5	110.3	121.0	110.8	115.8	15.21
2. Number of lbs. of ears per plot	39.4	46.5	60.6	69.0	56.4	50.8	68.8	61.8	6.49
B. MARKETABLE YIELD (culls excluded):									
1. Pounds of ears per plot**..........	22.0	24.0	36.3	39.0	31.3	24.8	41.3	30.8	6.30
2. Number of ears per plot............	66.3	61.8	63.3	60.0	61.5	52.3	89.5	58.0	......
C. U. S. GRADES AS % OF TOTAL WEIGHT:									
1. Per cent. grade No. 1..................	56.2	57.6	66.6	64.6	64.2	59.6	78.1	55.7	6.60
	21.6	14.3	17.9	18.4	14.2	12.9	8.0	18.1	......
	22.2	28.1	15.5	17.0	21.6	27.5	13.9	26.2	......
D. TIME OF MATURITY:									
1. Days—plantings to harvest........	76	79	86	88	88	88	88	91	......
2. Days—planting to 50% silked....	55.5	58.5	64.0	66.5	66.5	66.0	65.5	68.5	......
3. Days—25% to 75% of ears silked	5.2	3.8	5.0	6.0	6.0	5.8	5.8	4.3	......

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*Required for differences to be significant according to Fisher's Method of Analysis of Variance.
**Pounds of husked ears.

hybrid in this test gave no greater yield, stalks were weak, and shucks very loose. Stowells Evergreen Hybrid 14 x 5 was no better than Stowells Evergreen. At the present time, let us say that Golden Cross Bantam, Stowells Evergreen, Country Gentleman, and Narrow Grain Evergreen Hybrid 26 x 15 are among our best varieties of sweet corns. The market gardener in Maryland who desires the earliest corn should plant Early Beverley (68 days), a flinty type; or Adams Extra Early (74 days). Neither of the latter mentioned varieties are true sweet corns. Early Beverley has a very small stalk, and will not, of course, produce large yields.

String Beans

Giant Stringless Green Pod, a green podded bush type, has yielded consistently well in Maryland. Giant Stringless and Burpee's Stringless Green Pod are the principal varieties used by our canners. For an early bean Red Valentine may be planted. Our present varieties of Refugees do not thrive well in this State. The United States Department of Agriculture has developed the Refugee C-130 variety, which is earlier than the common Refugees, and has produced a greater yield under our conditions. Work in the United States Department of Agriculture is still being carried on to improve this bean.

A number of varieties of wax beans are planted, especially by home gardeners, among them Golden Wax, Davis Kidney Wax and Pencil Pod Black Wax. We have no data indicating which of these wax varieties should be planted in Maryland.

Lima Beans

For a small-seeded bush type, Henderson Bush Lima should be planted. Fordhook is recommended for the large-seeded bush type. Under our conditions, Henderson Bush Lima appears to be the most satisfactory of lima bean varieties. In some seasons, Fordhook fails to set enough pods for a fair yield.

Of the large-podded pole lima beans, King of the Garden is most popular. The variety Seibert yielded well in tests run in 1930 and 1931.

Spinach

Most of the Maryland spinach is grown in Baltimore County. Because of this localization, more definite recommendations can be made regarding specific varieties than with most of our other vegetable crops.

For the fall crop, particularly where mosaic is prevalent, Virginia Savoy should be planted. Where mosaic is not a factor, flat leaf types such as Gaudry and Viroflay may be used. For an over-wintered crop, always use Virginia Savoy. It is the most resistant of all our present varieties to low winter temperature. Old Dominion is also very resistant to low temperatures. The Maryland Agricultural Experiment Station is now selecting a strain of Virginia Savoy which is hardier than the parent stock, and tests conducted during two seasons have shown it to be exceptionally hardy.

In the spring, Old Dominion or Longstanding Bloomsdale, both of which are savoyed types, or King of Denmark and Nobel Giant, flat leaf types, may be used. These varieties are more satisfactory for spring planting than Virginia Savoy because the latter shoots to seed so quickly.

Other Crops

The speaker, in listing the following varieties of vegetable crops, realizes that there may be other varieties just as good or better for our conditions. Since we have no concrete evidence on their behavior, perhaps one guess is as good as another. In no case, however, have we listed a variety which has not been grown with success in Maryland, and most of them are those which constitute a major part of the crop:

CABBAGE:
1. Golden Acre—a variety even earlier (3 to 7 days) than Early Jersey Wakefield. Very uniform. Heads small.
2. Early Jersey Wakefield—recommended for the over-wintered crop, since it is especially winter hardy.
3. Succession—somewhat late (110 days). Large headed.
4. Late Flat Dutch—a good, heavy yielding, late cabbage.

CARROTS:
Early:
1. Dutch Horn—a very short-rooted variety.

Main Crop:
2. Chantenay—This old variety is still among the best for general purposes.
3. Danvers Half Long—slightly later than Chantenay. A very satisfactory variety.

BEETS:
Early:
1. Bassano—very light flesh. Sweet.

Main Crop:
2. Detroit Dark Red—deep red color, generally. Highly recommended.
3. Crosby's Egyptian—this variety, with Detroit Dark Red, constitutes the major part of the table beet crop.

CUCUMBERS:
1. Arlington White Spine.
2. Davis Perfect.

MUSKMELONS:
1. Jasper—a green-fleshed variety, resistant to wilt. Constitutes major part of crop in Anne Arundel County.
2. Hale's Best—Yellow-fleshed. Slightly earlier than Jasper.

WATERMELONS:
1. Florida Favorite.
2. Kleckley Sweet.

PEPPERS:
Sweet Peppers:
1. Ruby King.
2. California Wonder.

Hot Peppers:
  3. Long Red Cayenne.

ONIONS:
  1. Silver Skin—for green onions from sets.
  2. Prizetaker—for onions from seed.

PARSNIPS:
  1. Hollow Crown.

ASPARAGUS:
  1. Mary Washington.

RADISHES:
  1. Scarlet Globe.
  2. French Breakfast.
  3. White Icycle.

LETTUCE:
  Heading:
  1. May King—10 days earlier than Big Boston.
  2. Big Boston.
  Cos:
  1. Early White Cos.

SWEET POTATOES:
  1. Big Stem Jersey—dry, white-fleshed.
  2. Maryland Golden—this new variety, a sport of Big Stem Jersey discovered by Mr. T. H. White, is a golden-fleshed, high quality sweet potato rapidly gaining favor in Maryland. It is "moister" than Big Stem Jersey.
  3. Nancy Hall.
  4. Porto Rico—these latter two varieties are moist-fleshed, "sweet" types so popular in the South.

SQUASH:
  Early:
  1. Early White Bush.
  2. Golden Summer Crookneck.
  Late:
  3. Hubbard.
  4. Boston Marrow.

POTATOES:
  1. Jersey Redskin.
  2. Irish Cobbler.
  3. Green Mountain.

A recent discussion on "New Varieties and Strains of Vegetables," by Dr. Roy Magruder, of the United States Department of Agriculture, is to be found in the 1934 Annual Report of the Vegetable Growers' Association of America. It would be well for every vegetable grower to read this article. The individual grower, particularly interested in certain crops. may find that small plantings of these recently developed varieties, merely to observe their behavior, would finally amply repay him for the effort.

Let me remind you, also, that the excellent work of the Bureau of Plant Industry, United States Department of Agriculture, on vegetable variety standardization and description has resulted in Miscellaneous Publications 160, 169, and 170, dealing with descriptions of types of principal American varieties of tomatoes, cabbage, and garden peas, respectively. These can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 35 cents per copy for

No. 160, 50 cents for No. 169, and $1.00 for No. 170. Publications of a similar nature will also be made in the near future for carrots, beets, and spinach. A report by Dr. V. R. Boswell, on the nature of this work is found in the annual report of your society for 1931.

SOME RECENT DEVELOPMENTS IN TRUCK CROPS RESEARCH

By VICTOR R. BOSWELL
Bureau of Plant Industry
United States Department of Agriculture

A really comprehensive review of the recent developments in research relating to the growing and handling of truck crops would require more time than is available on this program, and would also lead us into discussions of fields of activity that can be better presented by persons other than your speaker. For example, most technical problems in such fields as entomology, soil chemistry and economics should be left to specialists in those lines of work. It happens that some of the most important recent findings relate to problems that are serious in distant parts of the United States but which are not important in Maryland. These will be touched upon only briefly so that we may devote most of our time to a consideration of those things of interest to Maryland growers of vegetables for both market and canning.

We shall consider the accomplishments of not only the United States Department of Agriculture and your own State agricultural experiment station, but of other experiment stations as well. The Federal Government plans to work only on problems of broad regional importance rather than restricted local or State problems. On the other hand, the various State experiment stations are striving to help primarily their own growers. Nature, however, knows nothing of State or national boundaries so that very often one State's solution of a problem important to them helps growers in other States far away. And Federal investigations are of value not only to many States, but often to many nations as well.

Breeding and Selection

There is a perennial interest in the problem of determining the best available varieties for each locality and purpose, and in obtaining still better new varieties. Many agencies are now engaged more extensively than ever before in developing improved strains of present varieties and also entirely new varieties to meet specific needs. In general, these vegetable breeding and selection activities have two major purposes, i. e., (1) the successful combating of disease or other unfavorable factors; and (2) the obtaining of products that are more valuable to the grower and to the consumer. There is little doubt that our most important single problem in the *production* of vegetables today is the economically successful control of certain plant diseases. As the culture of crops becomes more intensively concentrated in certain areas, and there is a more and more free exchange of plant materials and a more rapid spread of disease accompanying our highly developed transportation system, certain diseases are rapidly increasing in their distribution and severity. Some of these diseases, as you know, cannot profitably be controlled by any method of spraying or dusting that has been developed so far. The most practicable method of attacking certain such troubles is through breeding new varieties that are resistant to the diseases in question. It is very rarely that we are able to find a new strain or develop one which is entirely immune to a disease, but from a practical standpoint this is not necessary. If varieties can be found or developed by breeding and selection that show a high degree of resistance to a certain disease, even though they may "take it" to some extent, commercially profitable crops can be grown.

The ever increasing keenness of competition between growers and the increasing demands of consumers for products of really fine quality, make it important that we obtain new varieties of superior market and table qualities. Many of the older varieties that were formerly considered quite satisfactory are now hopelessly out of date and often bring lower prices than the better sorts.

Although certain of the tomato varieties developed by the Department have proved particularly valuable in this part of the country, there are still improvements to be made and our breeding and selection work are going ahead. Although not ready for release to growers, we have some market sorts of the same general type as Marglobe and Pritchard that promise to be superior to both in yield and are high in quality. The California, North Dakota and Indiana Experiment Stations have all developed strains of tomatoes particularly suited to their respective conditions but which do not appear to be adapted to Maryland conditions.

An enormous amount of work has been done in breeding sweet corn in the past few years. Perhaps the most striking development has been that of certain hybrid corns which are very uniform, high yielding and of good quality. Golden Cross Bantam, which is resistant to Stewart's disease, is the best known of these. Although this is primarily a canners' variety, it is of interest to the grower for the market also since it shows what can be accomplished by hybridizing suitable inbred lines. One should not expect all hybrid corns to be superior merely because they are hybrids. Many hybrid stocks may be no better than good stocks of the well-established varieties produced in the ordinary way. When hybrid sweet corn was just emerging from the experimental stage a few seasons ago, there was some question as to whether growers would pay the necessarily higher price for seed. The rapidly increasing acreage of Golden Cross Bantam indicates that growers are finding it profitable. It will be surprising if we do not find on the market in the next few years, an increasing number of hybrid sweet corns to meet the various requirements of truckers and canners.

High quality sweet corn that is free from ear worm injury has been almost impossible to produce in the South. As a solution to this problem, the Texas Agricultural Experiment Station has developed two new varieties, Honey June and Surecropper Sugar. These are large, late sorts, comparable in quality and season with Stowell's Evergreen, and highly resistant to corn ear worm damage by virtue of their long heavy husks. They have been reported upon favorably as far north as Virginia and may be of interest in parts of this State, although we have noted no reports of tests.

Your own State experiment station has valuable sweet corn breeding work in progress, and you should learn about it direct from your own specialists who are doing the work.

Maryland is an important producer of early cabbage. Although the early crop is damaged less than the late crop by the cabbage yellows, this disease is increasing in severity in the early crop in this State. Not long ago the Wisconsin Experiment Station and the United States Department of Agriculture cooperatively produced a yellows resistant cabbage of the Early Jersey Wakefield type known as Jersey Queen. Yellows resistant strains of late varieties (Wisconsin Hollander and Wisconsin All Seasons) have been available for many years, and more recently resistant strains of the Copenhagen Market and Glory of Enkhuizen type have been produced under the names of Marion Market and Globe. We now have available a yellows-resistant counterpart of every important susceptible commercial variety, including your locally important ones.

The Wisconsin Experiment Station has been active for many years in breeding varieties of peas for the canner, and it was there that the method of inheritance of resistance to fusarium wilt of pea was discovered. Maryland owes much to Wisconsin for the contributions that State has made to the success of pea growing in Maryland. About five years ago, wilt resistant stocks of Alaska peas first became available to farmers and now there is an ample supply for all who require them. Wilt resistance was found and developed in other varieties with more difficulty, but a few other resistant canning sorts have been recently developed. Wisconsin Early Sweet is one of interest to Maryland growers. The Maryland Alaska developed by your own experiment station is a highly resistant sort. Your station, as well as others, is continuing its cannery pea breeding work.

The development of highly wilt-resistant stocks of large-podded market garden varieties has been slow for a number of reasons. It is encouraging to know, however, that wilt-resistant varieties of this type now appear to be a certainty for the near future. The United States Department of Agriculture and the California Experiment Station are cooperating in this work, and small quantities of seed of very promising sorts have already been produced. These particular strains now on hand may or may not prove to be of value in Maryland, but the important point is that wilt-resistant varieties of apparently any desired type can be produced. A still more interesting point is that a number of these wilt-resistant stocks developed by different agencies show a degree of resistance to a complex of diseases known as root-rot, which so far appears to be a far more difficult thing to control.

You people are interested in beans. Mosaic is one of the serious troubles affecting this crop, particularly varieties of the Refugee type. Two new strains of snap bean of the Stringless Green Refugee type have recently been developed by the Wisconsin Experiment Station and one by the United States Department of Agriculture, that are tolerant to mosaic. The strain designated as U. S. No. 1 is two weeks earlier than Stringless Green Refugee and appears to have valuable characteristics for Maryland. These varieties have been so recently released for trial that commercial stocks are not yet available. The Virginia Experiment Station and the United States Department of Agriculture have each developed rust resistant strains of Kentucky Wonder Bean that are now being tested. These will be of interest to many market gardeners.

All of you know that California and two or three other Western States produce most of the lettuce that is grown for shipping in the United States. You also know that Maryland and the other Middle Atlantic States grow very little lettuce, because our present varieties are not at all adapted to this part of the country. Head lettuce varieties in particular are very poorly adapted to our high temperatures here. A plant breeder in the United States Department of Agriculture has now developed a few strains of lettuce of the New York or so-called "Iceberg" type that will form attractive medium-sized fairly firm heads of good quality in the vicinity of Washington, D. C. We never can tell, of course, how well these new sorts are going to be adapted to commercial conditions, until they have been grown widely for a few years; but certain of these new lettuce productions indicate that before long you may be able to grow head lettuce successfully in Maryland. The heads do not become as firm as the best Western lettuce, but they appear to be commercially worth while.

The United States Department of Agriculture and the California Agricultural Experiment Station cooperating, have developed strains of cantaloupes that show a marked degree of resistance to powdery mildew. These strains are as yet grown principally in the Southwest. We cannot be sure how successful these Western strains might be in the East, but we can at least be encouraged by the knowledge that the practicability of developing cantaloupes resistant to certain diseases has been proven. It doubtless will be but a question of time until additional disease resistant sorts are developed as protection against loss from diseases other than powdery mildew and their use will become more and more widespread.

Although there may be some question about including the remarks that are to follow with reference to sweet potato under the heading of breeding and selection, there is involved the selection of strains from material obtained from sources widely scattered over the globe. In these remarks we have referred a number of times to Fusarium wilt of different crops. The sweet potato also is attacked by a form of Fusarium wilt sometimes called blue stem, a disease which cannot be controlled by spraying, dusting or seed treatment. The Division of Fruit and Vegetable Crops and Diseases in the United States Department of Agriculture has for many years studied varieties and strains of sweet potatoes from all over the United States and also forms collected from tropical countries by the Division of Plant Exploration and Introduction. Among those sorts brought from the West Indies, from Java, and from Japan, have been found a large number which are not only resistant but apparently immune to Fusarium wilt or stem rot. A number of these varieties have been tested in widely separated States over the country by workers in various agricultural experiment stations and the results with reference to disease resistance are entirely consistent. There is just one trouble with most of these varieties. They are a bit rough in appearance and some of them are not as attractive in color as they might be. A few, however, are not at all unattractive, appearing somewhat like the well-known Nancy Hall variety. Some of the best are quite as good in eating quality as our present commercial sorts. Although the demand for these varieties has not been great so far, it is quite probable that the increasing prevalence of sweet potato wilt will force more and more growers to use disease resistant sorts if they are to continue growing the crop.

There is a recent development with the sweet potato that may not be considered as "truck crop research" but which is none the less interesting to growers of that crop. The Bureau of Chemistry and Soils of the United States Department of Agriculture has, within the past year or so, devised commercially practicable methods of obtaining a high quality starch from the sweet potato, and a plant for large scale production is now being built in Mississippi for the study of commercial methods of production. These facts are mentioned here since it happens that a number of these new sweet potato seedlings and introductions contain much more recoverable starch than our present commercial varieties, and in some localities at least, produce a much greater tonnage of sweet potatoes per acre. Special efforts are being made to test these more extensively and to increase the supply of planting stock. This starch development is perhaps one of the most important in recent agricultural research.

Many of you doubtless have seen notices in the agricultural press concerning the new varieties of potatoes developed in the Division of Fruit and Vegetable Crops and Diseases. Two varieties resistant to mild mosaic have been produced and have attracted quite favorable comment. Although by no means resistant to all forms of mosaic-like diseases, Katahdin and Chippewa are definitely resistant to the disease know as mild mosaic and are of particular interest and importance on this account. They are of good quality and are high yielders, superior in every way to the old McCormick and the Jersey Red. The Minnesota Agricultural Experiment Station has introduced the Warba which has done very well in the North.

There is little doubt that the great and increasing severity of several virus diseases of potatoes is the greatest single difficulty in potato production in this country today. Potato specialists and plant breeders are carrying on a very extensive program for the development of new potato varieties which are resistant not only to mild mosaic but to a number of other diseases. One has been found by federal workers that is strongly resistant to scab and there are a number of seedlings that show marked resistance to late blight. Although we cannot expect results in a year or two, very definite and encouraging progress is being made toward getting varieties that show a degree of resistance toward each of a number of different diseases.

Even though Maryland is not an important producer of onions or celery, we might mention that important strides are being made in breeding new sorts and improving the old ones. The Michigan Agricultural Experiment Station has produced a yellows-resistant strain of celery named "Michigan Golden" and the California workers have determined how to eliminate the hereditary form of pithiness or hollow stalk. In addition to vastly improving the seed stocks of a number of important commercial varieties of onions, this latter station has developed by hybridization a type that has a peculiar manner of developing its leaves that makes it less susceptible to the ravages of onion thrips. The basal part of each leaf that surrounds each successive inner leaf as a sheath, clasps it so tightly and is so disposed that thrips cannot get down between the leaf bases toward the "neck" where they do so much damage in our present varieties.

Standardization

In an effort to reduce the present chaotic variety situation to some semblance of order, the United States Department of Agriculture in cooperation with about 25 State experiment stations, has been studying for the past five years the characteristics of the best obtainable stocks of the principal commercial varieties of vegetables. On the basis of the best opinion obtainable from technical specialists, growers and seedsmen, a standard is being established for each variety and this standard is thoroughly described and illustrated so that seedsmen, growers and dealers can bring their ideas of a variety into agreement and deal with each other on the basis of varietal name with confidence. Of perhaps equal importance in this work is the determination of certain unavoidable variations in appearance and behavior of varieties that are due to the conditions under which they are grown in widely separated areas in the United States. Results have been published upon tomatoes, cabbage, and peas; field work is completed on carrots, beets and spinach; and work is in progress on onions, turnips and rutabagas.

Commercial Trends and Commercial Researches

The work of geneticists and plant breeders in the Federal and State research agencies, and the drive for improved standards in truck crop varieties are proving to commercial seedsmen that they can profitably do a great deal of improvement and development work themselves. The ever increasing demand for better quality, higher uniformity and superior yields, and the realization of farmers that they can't afford poor seed, have made it desirable for quite a number of seed firms to add highly trained plant breeders to their staffs. The number of companies who are thus seriously attempting to meet the rigid demands of growers is gradually increasing. There is no doubt that in the past few years the general quality of seed stocks has been improved considerably.

We believe that the variety standardization program referred to above is exerting no small influence in improving trade conditions. With the increased knowledge of varieties and a growing recognition of the importance of horticultural accuracy and intellectual honesty, fiction in seed catalogs is gradually giving way to facts. It is a comparatively new thing for a seed catalog to tell the truth about a poor variety, or to enumerate the limitations of a variety. A few firms are now wise enough to know that a catalog should give accurate dependable information on the stocks listed for sale, to insure as far as possible that the prospective buyer will get what he requires for his particular purpose. Unless the buyer can depend on this information, the seedsman will lose a customer. There are still far too many catalogs that merely boast about everything listed instead of giving intelligent descriptions. It will take time to correct all this, but it is a significant fact that a start in the right direction has been made.

Growers can help the seedsmen and help themselves by knowing the important varieties and asking for them by their right names. If we could induce growers to stop asking for the thousand-and-one trick varieties and trick names that are inferior to or no better than the proven few important varieties of each crop, everyone concerned would benefit. New sorts must be tried in a small way, pending proof of their value. Growers should follow the recommendations of their State and Federal workers.

It must be realized that good seed must sell at a higher price than poor seed, and that the latter is expensive at any price. Take advantage of this new trend in commercial production for your own best interests. The honest, careful, intelligent seed producer cannot continue to improve nor even maintain high quality stocks unless growers will use his product at reasonable prices.

In this general connection it is noteworthy that the amount of seed certified by the few States offering such service, is increasing greatly. This is another encouraging development.

Fungicides and Other Methods of Disease Control

One of the most outstanding results just recently obtained has been in the control of bacterial canker of tomato which has caused very serious losses in the past few years. The Bureau of Plant Industry of the

United States Department of Agriculture and the Utah Agricultural Experiment Station cooperating, have discovered that a return to the old-fashioned method of fermentation in the saving of tomato seed will control, almost 100 per cent., the transmission of bacterial canker by the seed. They have also demonstrated that careful seed bed sanitation is helpful. A few years ago the whole tomato-growing industry was wondering whether or not they might be over-run by this rapidly spreading bacterial canker disease or whether it could be successfully checked and controlled. It is now evident that means are at hand whereby this disease can be practically entirely eliminated and need no longer be a factor in most of the important tomato growing regions.

In passing, we might mention an outstanding accomplishment in the control of celery mosaic in Florida in which the United States Department of Agriculture showed that the disease was carried to the celery plants from certain weeds about the fields. Weed eradication in and around the edges of the fields has given very satisfactory results, in disease control.

The New York State Experiment Station at Geneva, has made important contributions to the control of damping off in plant beds and in the field by the use of red copper oxide on the seed before planting. The use of formaldehyde dust as a preventive of damping off is another comparatively new development. This is made by adding commercial formalin to dry muck or fine leaf mold, mixing thoroughly, and then mixing this in small amounts with the surface soil of the plant bed.

The growers' fight against disease does not end as soon as he has harvested a successfully grown crop. In these times of producing for distant markets several days usually elapse and sometimes months, between the harvesting of a product and its purchase by the ultimate consumer. During this interval of transportation or storage and awaiting sale there is plenty of time for numerous diseases to cause severe loss. Many of these diseases are initiated under field conditions but do not show up until after the product has been started to market. This means, of course, that thorough disease control in the field is of primary importance. At the same time, however, many of the so-called transit and storage diseases can be held in check by proper methods of treatment after the product is harvested. Numerous workers in the Department and in the States are spending their entire time in efforts to conserve harvested products and insure their reaching the consumer in a sound and wholesome condition. They are interested not only in developing methods that will best prevent deterioration of the product but in devising the cheapest and simplest possible methods for attaining this end. The great increase in the practice of precooling and the use of carbon dioxide or dry ice in the shipping of fruits and vegetables greatly reduce icing charges and get the product to market in better condition than was possible under the older methods of handling. The most outstanding developments along these lines have been made with reference to the transportation of fruits but the principles involved are also of interest to the vegetable growers.

For example, work on the precooling and shipping of asparagus, cantaloupes and lettuce is now under way and although the results are so incomplete that definite recommendations cannot be made, they are very promising.

Physiology of Development and Deterioration in Relation to Quality of Vegetables

What was good enough for our grandfathers and our fathers may not be good enough to suit us and the generations to come. There is an increasing drive to obtain better and better vegetables. We have already mentioned how the plant breeders and the plant pathologists are working to obtain better products. There is still another group of workers who are studying another type of problem in efforts to correct still different difficulties with our vegetables and vegetable products. All of you realize that at times crops in the fields or harvested products suffer abnormal development or deterioration which is not due to the variety nor to any virus or to bacterial or fungus organism.

In efforts to understand the development of poor or otherwise abnormal growth such as the breakdown of tissues or the malformation of fruits, leaves or other plant parts, the plant physiologist carefully studies what goes on in normal and abnormal plants in a way more or less comparable to that used by our own doctors. When a plant remains stunted in size and fails to produce a crop, is it because its food isn't right, because it doesn't get enough light or because the temperature isn't right? You might be surprised at some of the remarkable differences in plant growth that are produced by comparatively small variations in plant food, in water supply, in length of day, brightness of light and in temperature.

There have been erroneous notions that the use of potash in fertilizers on peas would cause the peas to be hard and starchy. Workers in the Bureau of Plant Industry have carefully studied this problem from a chemical standpoint and have definitely shown that under some conditions at least, there is no significant difference produced in the composition of peas of a given grade nor any significant difference in grades of peas treated with potash. The application of nitrogen, however, did alter the composition of peas, causing them to possess the characteristics of younger peas. In other words, peas receiving a fairly heavy application of nitrogen were higher in quality than peas of the same size from plots not so treated. Workers at the New York Experiment Station found no effect of potash on quality.

Studies are under way in the United States Department of Agriculture at the present time to determine some of the effects of soil texture, temperature, rainfall and fertility on the quality and shape of roots of beets and carrots. This problem is of particular interest not only from the standpoint of producing the highest quality market product but also because it has an important bearing on the expression of varietal characters. In other words, the Crosby Egyptian beet described by a grower or seedman as having a certain definite appearance may appear distinctly different under more or less adverse soil and climatic conditions. Cucumbers are particularly susceptible to unfavorable environment. Growers have had the experience of harvesting a crop of cucumbers distinctly unlike the variety that they purchased and have immediately concluded that the seedsman was at fault. It is true, of course, that errors are sometimes made in filling orders but it is also true that under certain adverse conditions some varieties of cucumbers may appear to be some other variety and turn out to be quite unsuited to the purpose for which they were grown. Studies are under way at the present time with a small number of the most important varieties to determine in a preliminary way the cause and exact nature of some of these unusual growth responses.

A plant physiologist in the Department is preparing for publication a report of the results of a most interesting and significant study relative to the responses of tomatoes to different fertilizer, moisture, temperature and light conditions. Despite the enormous amount of work that has been done both by the Government and by the various State experiment stations relative to the physiology of the tomato and factors that affect its growth and fruitfulness, a number of new points have been brought out which have a direct bearing on the control of such troubles as failure to set fruit, blossom end rot, fruit wall breakdown, and puffiness. These results when published will be of particular interest to greenhouse men, but also to market gardeners and truckers.

Another worker has shown how the germination of onion seed can be maintained practically without loss for more than four years. The results will soon be published.

Do you know what causes potato scald? Do you know that exposure to light for but a few hours on a bright day plays havoc with newly dug potatoes? No, it isn't the heat; some of our workers have shown that it's the light that does the damage.

This type of problem keenly interests many experiment station workers. The Indiana and California Experiment Stations and also your own have made numerous studies of the factors affecting quality in tomatoes and tomato products. The importance of variety, high fertility, prompt and careful handling, have been clearly shown, and certain climatic effects are being studied.

Government and State workers are determining marked differences in adaptation of onion varieties, depending in large measure upon the length of the daylight period where they happen to be grown.

Workers at the Cornell University Experiment Station have shown that on certain soils in New York, certain yellow-skinned onion varieties fail to develop their characteristic color because of a lack of copper in the soil. That station is also making important studies for the purpose of devising accurate and dependable methods of describing and evaluating that elusive and now indefinite but very important thing we call "quality" in various products.

Fertilization and Culture

Most fertilizer problems are quite local, and it is hazardous to draw sweeping conclusions as to the best analysis and amount to use on the basis of tests in only one or two places. At the same time, results obtained in one place raise interesting questions and possibilities of usefulness in another. Probably the most interesting new line of work in this field is the study of methods of application. For many years investigators have devoted a great deal of attention to amounts and kinds of fertilizer, with some little consideration to time of application. Until recently, however, almost no serious study has been made of the exact placing of the fertilizer with reference to depth and distribution in the soil and distance from the plant or seed. Numerous experiment stations and other organizations are now working vigorously upon this general problem as it relates to truck and other crops. These exhaustive studies are still relatively new but valuable things are being learned.

As an example, a couple of years ago the United States Department of Agriculture and the North Carolina Experiment Station showed that on light sandy soils much of the loss of stand of transplanted sweet potato plants was due to the customary amount of fertilizer that had been worked into the rows before transplanting. It was found that on those soils much better stands and superior yields were obtained when readily soluble fertilizers were applied half mixed in the row before planting and half on top of the row two to three weeks after the plants were set. Broadcasting the whole amount on top of the rows, three weeks after transplanting generally gave as good results. With very soluble materials this last method was distinctly better than the half under and half on top of the row method.

The reason for this appeared to be that large quantities of readily available fertilizer mixed in the row before transplanting resulted in such a high concentration of soluble material in the soil solution that the young plants were definitely injured.

The near future should produce some valuable advances in our knowledge of the way to get the most out of a dollar spent for fertilizer. We should try to keep abreast of these developments as they are reported.

Non-Poisonous Insecticides

New evidence that emphasizes the considerable danger of using lead and arsenic compounds on edible parts of truck crops has made it necessary to develop other materials for controlling chewing insects. Entomologists in the Department and elsewhere, and commercial agencies as well, are doing all possible to efficiently adapt derris and other materials such as pyrethrum to your truck crop insect control problems. These insecticides are non-poisonous to higher animals and to man in dosages that are sufficient to kill insects so are of particular interest as a means of eliminating the hazard of harmful dust and spray residues. Up-to-date information regarding these comparatively new materials should be obtained from the entomologists of your experiment station, or from the Bureau of Entomology in Washington.

Conclusion

Your speaker realizes that certain of these new things discussed here may not be entirely new to some in this audience. We believe, however, that they are of such importance that they should be emphasized in the hope that all of you will become thoroughly familiar with every point that has a bearing on your own activities. Popularly prepared bulletins are not readily available regarding all these matters, at this time, but we are sure that State and Government specialists will do all possible to supply you with publications on any specific question that you have and they will supplement available publications by special attention to your individual problems. The research workers' greatest compensation is to see problems solved, not just experimentally, but to see a whole industry make profitable use of these solutions. These new developments are interesting enough in themselves, but their real significance lies in their every-day value to producers and consumers of truck crop products.

GROWING AND HANDLING OF SWEET POTATOES

By W. P. Hotton

Salisbury, Maryland.

In growing satisfactory crops of sweet potatoes it is important to have good seed stock. I find it desirable to select clean, well-shaped potatoes from healthy hills. In bedding them, the beds should be cleaned up as early as possible, so that the frost may kill most of the insects. About four inches of pine needles are first put into the beds and a load of good manure is used for every 20 yards. This is thoroughly moistened and then enough sand is applied so that potatoes can be bedded in it. The beds are covered with well-oiled muslin about two weeks before bedding begins.

The seed potatoes are sorted over and then dipped into a solution of bichloride of mercury. They are then placed into the beds and sprinkled with water. They are covered with about 1½ inches of clean sand. They should begin rooting in about five days. Top dress with a little fertilizer and water freely in the evening. Give a little ventilation to keep the vapor out. Close early in the morning. Keep the moisture from collecting on the cover and dripping on the plants, as this may induce the development of black shank or stem rot.

Before pulling plants for setting into the field, harden them off for two days. Pull only those plants which are of regular size, leaving the smaller plants in the bed, as they will develop better there than they would in three weeks in the field.

For early digging set plants 14 inches apart in rows 32 inches apart. This close planting gives more plants to the acre and they should average two potatoes to the hill.

For the later digging set plants 17 inches apart in rows 32 inches apart. There is less moisture in August and in the months following and plants need more room. Since our soils are mostly light sands, plants are set on the level without ridging.

In 7 to 10 days after planting the fields, 1,200 pounds of a 3-8-10 fertilizer is applied with a distributor along the row near the plants. Fields are cultivated twice and weeded every 10 days until ready to lay by.

The early crop which was planted May 18 was dug on August 26. This planting produced 206 bushels of primes per acre.

The later planting which was set June 8 was dug October 14 and yielded 636 bushels of primes per acre.

We have found that it pays to wash potatoes when shipped to market. Potatoes are placed on an endless belt and subjected to jets of water which clean them thoroughly and their attractive appearance is appreciated by the buyers.

For storage the house is thoroughly cleaned and well ventilated. The potatoes are handled carefully, picked only when dry and placed into clean hampers or tubs.

The storage house is heated to 98 degrees F. and kept at that temperature for ten days. After that the temperature is reduced to 55 degrees F. The ventilators are left open to avoid air specking on the potatoes.

The Maryland Golden Sweet is the variety grown. It is two weeks earlier than any other variety, the potatoes are smooth without veins and have a rich golden color. They sell for 25 to 35 cents more per bushel on the market than do other varieties.

Last but not least, all honor to the Experiment Station for giving us a variety which has made it possible for us to compete on the market with other sections.

You may be interested in this little clipping from our local paper:

"The fame of the Maryland Golden Sweet has spread afar. The delicious flavor of these tubers has spread to remote places heretofore unsuspected.

"This incident was cited by William Hotton as further proof—if any is needed—of the tuber's increasing popularity. Tuesday Mr. Hotton discovered a muskrat nibbling on Golden Sweets in his barn on Mt. Hermon Road.

"Now the muskrat is noted for his home-loving instinct and rarely does he roam from his marshy domicile. Mr. Hotton pointed out that this particular muskrat traveled more than one-half mile from the nearest marsh to get a taste of the farmer's tubers."

Second Session

Thursday, January 10, 1935

COLOR AND OTHER FACTORS AFFECTING QUALITY IN TOMATOES

By H. B. CORDNER
College Park, Maryland

Quality in tomatoes, as in other vegetable and food products, is a thing difficult to define. This is true because we as individuals may have in mind different standards of judgment, and even when we are unified in that it is difficult to put our concept into the concise language required to convey that concept unaltered to others. Again quality is the result of the interaction of several attributes which are difficult to separate. Thus it seems logical to limit this discussion to a few of the more tangible factors which contribute to quality, and it is my purpose to review these in the light of the results of experimental work at the Maryland and other experiment stations.

As growers of tomatoes it is your objective to comply with the consumer's demands in regard to quality. Thus when tomatoes are placed on the retail market they must possess those outward quality characteristics such as color, size, solidity, and freedom from defects. Furthermore, in order that the final sales transaction be permanently agreeable, it is necessary that the flavor or palatability of the product be in agreement with the consumer's expectation.

The quality factors, color and flavor, develop in the tomato during the final process and seem to be favored a great deal by vine ripening. When vine ripening is possible there is still the problem of preserving the quality until the fruit is consumed. Again vine ripening is not always possible because of a delay between harvesting and marketing. Thus two problems exist—that of improving and preserving the vine ripened quality of the fruit and that of providing storage conditions that permit harvested fruits to complete the ripening process in a way that vine ripening is most closely approximated.

Normal Color Development

We are all familiar with the various hues and shades assumed by tomatoes as they ripen in the field. The green of the mature fruit becomes lighter green, then yellow-green, pink, and finally the red color appears. Ripening is not uniform throughout the fruit, hence these various colors appear first at the blossom end. These colors serve as an accurate index for judging the ripeness of the fruit, and it would probably be of interest to review some of the transformations going on within the tomato which bring about these outward color changes. It also is desirable to discuss the normal coloring process in order to better explain how deviations from this normal trend arise.

A total of five substances, classed as plant pigments, are found in tomatoes during ripening, and these materials are responsible for the colors observed, as shown by the investigations of such men as B. M. Duggar of Missouri. Duggar's work gives us an explanation of normal color development. He showed that the paling of the green-mature fruit is due to the decomposition of the two green pigments known as "chlorophylls." These pigments are found in small roundish bodies called "plastids." Following this breakdown of the chlorophylls, the plastid bodies assume a yellow color due to the presence of a yellow pigment (xanthophyll) left as a by-product of the destroyed chlorophyll. Soon the plastids themselves break up, giving rise to a fourth pigment "carotin" which appears as small orange granules. Finally a fifth pigment, "lycopersicin," appears in the cells as small red crystals, which are long, pointed, needle-like structures. Thus we see that the color transitions from the green to the full red-ripe tomato is accomplished by pigment changes within the cells of the fruit. The final red-ripe color is due mainly to the presence of the orange and red substances.

External Factors Affecting Color Development

Under ordinary conditions these various processes go on in an orderly and unified manner in tomato fruits and good color is the result. However, at times environmental conditions may alter the course of events and color abnormalities arise. In the main the sequence of color changes up to the last step—the formation of the red pigment—is not easily affected by environmental factors, but, on the other hand, red color formation is definitely affected by factors such as temperature and aeration. Duggar showed that mature-green tomatoes stored at temperatures between 86 degrees and 105 degrees F. ripened to a yellow-orange color due to the absence of the red crystalline pigment. At lower temperatures, but in the absence of air, or the oxygen it contains, fruits ripened, but were devoid of the red substance.

Later Rosa showed that green-mature fruits stored at lower temperatures (39-46 degrees F.) did not develop normal color and reddened but slowly at 54 degrees F. Thus today it is generally known that in order to secure desirable color ripening in tomatoes they must be stored at a temperature above 46 degrees and below 86 degrees F., with good ventilation to assure a good oxygen supply. The optimum, as we know, is at about 75 degrees F. Temporary storage at higher or lower temperatures does not affect the subsequent reddening of the fruit, providing extremes are not used which cause definite injury to the fruit tissues.

These investigations show that temperature is an important factor in the coloring of storage fruits and it seemed desirable to study the problem of color development in vine ripening fruits in the field. Thus an investigation was started at the Maryland Experiment Station. Some of the results will be discussed at this time.

Color Development Under Field Conditions

Preliminary work wherein whole fruits or a localized area of a fruit were subject to artificial heat showed that tomatoes ripening on healthy vines respond to high temperatures—as far as color ripening is concerned—in a manner similar to harvested fruits. Furthermore, it was found that fruits in the field are frequently subject to temperatures well above the critical point of 86 degrees F.

TABLE I.—TEMPERATURE OF TOMATO FRUITS AS AFFECTED BY DIRECT SUNLIGHT.

Temperatures Measured (Degrees Fahrenheit)	Maximum	Minimum	Mean	Deviation from Air Temperature	
				In Shade	In Sun
Series I—August 2, 1933—9 hr. period, 9 a. m. to 6 p. m.					
A. Air temp. in direct sunlight......	100	89	94.6	6.4	....
B. Air temp. in shade of vine........	92	83	88.2	....	— 6.4
C. Fruit temp. in direct sunlight..	123	96	113.1	24.9	18.5
D. Fruit temp. shaded by vines....	92	82	88.5	0.3	— 6.1
E. Fruit temp. in sun a. m. shaded p. m............	115	90	104.7	16.5	10.1
F. Fruit temp. in shade a. m. in sun p. m.........	116	85	101.0	12.8	6.4

The results of fruit temperature measurements indicate that direct sunlight has a marked influence on fruit temperature. The sunny side of unshaded tomatoes attains an unusually high temperature on bright days and maintains a high temperature throughout the day period. As an average this fruit temperature exceeded the air temperature in the sun by about 18.5 degrees F. and at the maximum was about 26 degrees F. above the air temperature. At the same time tomatoes under a dense cover of foliage had a much lower temperature due to the protective shade. Thus as a mean the temperature of the shaded fruit was about 24 degrees lower than that of the sun-exposed fruit and corresponded closely to the air temperature in the shade.

This rather wide temperature difference between shaded and sun-exposed tomatoes must have some practical significance. First, it is very likely that a more agreeable temperature for ripening is found in the shade, while the heating of the fruit in the sun may result in certain definite types of injury. Localized yellow areas (unreddened) might be due to delayed formation of the red pigment resulting from moderate heating above the critical point of 86 degrees F. Again where heating has been severe so that temperature of 127 degrees F. or greater is attained, sunscald, as described by Harvey, may result. In such cases definite injury to the tissues occur and subsequent reddening is impossible.

The actual value of the shade of the foliage in promoting good color development is shown in Table II. The color of the tomatoes is expressed in two ways. First, as an arbitrary rating (the score) based on a scale ranging from 1-10. The higher the score the better the color, with ten representing a perfect score. The other two values given—hue and chroma—are derived from readings secured by means of a mechanical colorimeter. The significance of these values might be stated in this way: desirable tomato color is represented by a low hue value and a high chroma value. Relative to the hue number, a value of 5 represents a full red color. Values lower than this indicate a red-purple color or hue, while values above 5 represent yellow-red colors with red decreasing in proportion to yellow as the value increases.

The results given in Table II show that a much better color developed in the fruits ripened under the protective shade of the vine in comparison to that of fruits ripened in the absence of this shade. Thus it is evident that the foliage of the plant is an important factor from the point of view of color development and another good reason for following cultural practices which develop and maintain good foliage in the plant is suggested.

TABLE II.—SOME VARIETIES OF TOMATOES PROVIDE MORE SHADE FOR THEIR FRUIT, WHICH RESULTS IN LESS SUNBURNING.

Variety	Per Cent. of Total Fruits			Per Cent. Sunburned Fruits
	In Sun	Partly Shaded	Shaded	
Potato Leaved	15.2	19.7	65.0	......
Marglobe	15.4	34.7	49.9	13.2
Pritchard	19.3	31.3	46.4	19.5
Break O'Day	43.5	34.8	21.3	48.3

The natural growth habit of our tomato varieties determine to some extent the proportion of the fruits shaded during the ripening period and consequently the extent of heat injury encountered during a normal growing season. This is illustrated in Table III, which gives values representing averages for three mid-season harvests (August 9-19) in 1933. The amounts of sunburning resulting for similar harvests in 1934 are given in the right-hand column.

TABLE III.—COLOR OF VINE RIPENED TOMATOES IN RELATION TO FOLIAGE SHADING

(average for three varieties for the harvests as given)

Harvest Date	Score			Hue			Chroma		
	Shaded	Partly Shaded	In Sun	Shaded	Partly Shaded	In Sun	Shaded	Partly Shaded	In Sun
Aug. 9, 1933..	6.10	6.70	4.40	6.81	6.71	7.59	8.61	8.80	8.12
Aug. 14	6.90	6.40	4.70	6.29	6.51	6.88	8.95	9.08	8.65
Aug. 19	7.10	6.10	5.00	6.25	6.39	6.63	9.00	9.00	8.62
Average	6.37	6.40	4.70	6.45	6.50	7.03	8.89	8.96	8.46

It is evident that the variety Break O'Day, which has rather sparse foliage and a more prostrate growth habit, provides less shade for the fruits. This proves to be a disadvantage as far as color development is concerned.

The question of color differences in our commercial varieties might be of interest to you. It seems that these differences are small except as affected by vine characteristics and shading as has just been discussed. However, a great number of color readings have been made on the varieties Pritchard, Marglobe and Break O'Day, and the first named variety has quite consistently produced fruits with a redder hue than the other two. Under favorable conditions the color of Break O'Day fruits may equal or even surpass that of Marglobe fruits. The Break O'Day variety, however, is naturally at a disadvantage due to the open type of plant it produces.

Degree of Maturity and Storage Temperature as Factors Affecting Quality

There is no doubt that color is not the only factor in quality of tomatoes. Factors such as ripeness at harvest and the environment after harvest and before consumption are important, and I feel that a few points on these would be worthy of mention even though it is a repetition of facts you may already know.

I believe that we are all agreed that the fully vine-ripened fruits we get from our garden make the nearest approach to the acme of tomato quality. Furthermore, that the less mature the tomato is at harvest the poorer the quality after subsequent ripening off the vine. The explanation of this is found, at least in part, in the work of such investigators as Rosa and Sando.

These investigations show that certain important changes in the composition of the fruit take place during vine ripening. Thus as the fruit advances from the green-mature stage to full red ripeness the total quantity of acids decreases. There is also a decrease in active acid (H-ion concentration) after the early pink stage. Meanwhile the sugar content increases, reaching a maximum in the full size fruit. The sugar content being fortified by a digestion of starch stored in the fruit and by translocation from the plant. The quantities of other materials in the fruit, such as protein, other nitrogen containing materials, and pectins vary during ripening which may or may not affect the palatability of the fruit. The substances, sugar and acid, appear to influence flavor most and an agreeable balance is established between these materials in the vine-ripened fruit.

The ripening process follows a similar trend in fruits harvested immature with comparable color and composition changes, but the stage of maturity at harvest and the storage environment after harvest has a marked influence on the final quality of the product. Early separation of the fruit from the vine deprives the fruit of sugars and other material normally absorbed from the mother plant. Thus the sugar content of green harvested fruits increases but little during storage ripening, since that sugar gained from the starch storage is practically all used up in supporting certain life processes in the fruit. It, therefore, seems desirable to leave the fruits on the vine as long as is consistent with the time required to get the product to the consumer. Sando expresses the opinion that tomatoes should not be harvested before some pink is evident, even for long distance shipment.

The temperature of storage is an important factor and has been rather extensively studied by such men as Sando, Rosa, Wright, Haber and others. Temperatures ranging from 70 degrees down to the freezing point of the fruit (30-31 degrees F.) have been used and in general it has been found that the nearer the temperature approaches this minimum, the slower the rate of ripening. From this it should not be inferred that a low temperature, say 32 degrees F., is the best for tomato storage. In fact, the storage temperature recommended by the above investigators is well above this temperature. When prolonged storage (4-5 weeks) is anticipated, a temperature of 50-55 degrees F. is desirable. Lower temperatures may safely be used for shorter storage periods. Thus the safe storage period at 40 degrees F. is about 10-14 days, while at 32-36 degrees F. fruits may be safely stored for about 5 days or at the most 7-8 days. By safe storage period, I mean the length of time unripened fruits may be stored at the temperature indicated and still retain the ability to ripen normally when transferred to a higher temperature in the ripening room.

When tomatoes are stored at low temperatures for intervals of time in excess of these "safe periods," certain definite types of injury result. Both firm-ripe and green-mature fruits are subject to complete breakdown on removal from prolonged low temperature storage. Likewise, the color of red-ripe fruits stored at 36-40 degrees F. has been observed to become less desirable, while green-mature fruits may fail to color satisfactorily after removal from storage at these same temperatures.

METHODS OF CONTROLLING TRUCK-CROP INSECTS AND AVOIDING HARMFUL RESIDUES

By D. J. CAFFREY
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During the past three years the Bureau of Entomology and Plant Quarantine has devoted special attention to field and laboratory investigations having for their objective the control of truck-crop insects by methods that will not leave harmful residues on the marketed product. This work has consisted principally of three lines of endeavor: (1) The testing of insecticides that do not incur the risk of harmful residues; (2) experiments to determine the proper time and method of insecticide application to avoid the presence of poisonous residues on the marketed product; and (3) the determination of control methods—such as field sanitation and cultural practices, and particularly the thorough utilization or destruction of crop remnants after harvest—which do not involve the use of insecticides. In this search for substitutes for arsenicals and similar poisons, and for other means of eliminating harmful residues, extensive experiments have been conducted in Ohio, Virginia, Florida, North Carolina, South Carolina, Louisiana, and California. These experiments have been concerned chiefly with cabbage, beans, celery, peppers, and squash and related plants.

The use of lead arsenate is not recommended for the control of insects attacking any vegetable crop mentioned in this discussion, on account of the double residue hazard incurred by its lead content and its arsenic content.

The use of other arsenicals and cryolite is, however, suggested in the control of certain insects on several of the crops under consideration. This suggestion is made with the emphatic qualification that such poisons should not be used after the appearance on the plant of fruit or foliage which will be sent to market or consumed, except in cases where it is known that washing or stripping will remove all spray residues.

Cabbage Insects

Cabbage looper, common cabbage worm, diamond-back moth: In tests to control the common species of cabbage worms on cabbage, it has been demonstrated that arsenicals and other inorganic insecticides may be applied to this crop before the plant begins to form a head, since all leaves which develop prior to that time have dried or are discarded at the time of harvest. This means that under ordinary growing conditions the application of poisonous insecticides should cease at least 40 days prior to harvest in order to avoid danger of harmful residues. An exception should be made in instances where the entire cabbage plant, with numerous loose outer leaves, is harvested, as U. S. Grade No. 1—Green. Under this circumstance arsenicals or other poisons should not be applied to the plant at any time. The point should be emphasized that chemical analysis of the outer leaves of cabbage treated with arsenicals at any time during the growth of the plant, regardless of weather conditions after such treatments, have shown repeatedly the presence of quantities of arsenic which exceeded the legal tolerance limit of 0.01 grain of arsenic trioxide per pound of the vegetable.

In the tests with non-arsenical compounds that do not leave harmful residues on the plants, dust mixtures composed of derris root powder containing from 0.5 to 1.0 per cent. of rotenone, mixed with tobacco dust, talc, or clay as a diluent, applied at the rate of 15 to 20 pounds of the mixture per acre, have given the best results of all the materials tested, under the conditions encountered in widely separated parts of the country. This treatment is recommended for the three common species of cabbage worms, for application at any time during the development of the plant. The number of treatments required and the cost involved in obtaining cabbage worm control with derris combinations, on a commercial basis, have not yet been determined under the different conditions existing in various parts of the country where cabbage is an important crop. However, in the South the results to date have indicated that the derris-dust mixture containing 0.5 per cent. rotenone costs approximately the same as undiluted calcium arsenate and was more effective in killing the common cabbage worm and the cabbage looper than any of the arsenicals tested. In general, the pyrethrum-dust mixtures and hellebore have been less effective than the derris combinations, although pyrethrum dusts containing 0.05 per cent. of pyrethrin I gave good results against the cabbage looper, and was more effective than Paris green and lime (1-9) or undiluted calcium arsenate in controlling this species.

A dust mixture composed of 1 part of Paris green and 9 parts of hydrated lime was fairly effective against all the common species of cabbage worms, but, as mentioned previously, the use of this material is limited strictly to the early stages of plant growth, when there will be no danger of harmful residue. The results in dusting with undiluted calcium arsenate were so variable as to preclude a recommendation for the use of this insecticide. Cryolite (sodium fluoaluminate), diluted with 2 parts of talc, clay, or tobacco dust, gave approximately the same results as Paris green and calcium arsenate. Magnesium arsenate was ineffective.

Dust mixtures have given better results than spray mixtures in the cabbage worm tests. Derris-root powder in water, used at the rate of 1½ to 2½ pounds of the derris root containing 4 per cent. rotenone to 50 gallons of water, has given the best results of any of the spray mixtures.

In the experiments, the dosage per acre with hand sprayers averaged slightly over 100 gallons. Results showed that there was no saving of the derris-root powder in sprays, as compared to dusts, and the dust gave better control. The degree of control was not increased by adding different emulsifiers to the spray mixture, such as miscible pine oil, sulphonated castor oil, commercial spray oils, and high-grade finely powdered soap.

Harlequin bug: Preliminary tests have indicated that compounds containing rotenone are effective against the harlequin bug, a common pest of cabbage and other important vegetable crops.

Insects Affecting Cauliflower, Broccoli, Kale, and Collards

The Bureau has not had an opportunity to conduct any extensive experiments on the control of cabbage pests on cauliflower, broccoli, kale, or collards in order to determine the possible utility of arsenical substitutes. However, it is believed that the compounds containing rotenone and pyrethrum should give approximately the same results on these crops as when used on cabbage.

Field sanitation: Since fields of harvested cabbage and related crops often serve as sources of infestation to new plantings, special attention should be given to the use or destruction of all crop remnants.

Bean Insects

Mexican bean beetle: Extensive tests with snap beans, lima beans, and horticultural beans, in Ohio and Virginia, have demonstrated that the Mexican bean beetle can be controlled effectively, without danger of harmful residue, by the application of derris sprays or dusts. These sprays or dusts gave excellent foliage protection and increased the yield of beans markedly when compared to untreated beans. In general, a better control has been obtained with the derris-root sprays than with the derris dusts. In preparing the spray, finely ground derris root containing 4 per cent. rotenone was used at the rate of 1½ to 2½ pounds per 50 gallons of water (equivalent to 0.015 to 0.025 per cent rotenone in the spray suspension), with appropriate adjustments for varying rotenone content of the derris-root powder.

At these spray dosages there is little or no saving of derris as compared with the use of dust mixtures, but the better control and the increased residual effect as an insecticide obtained with the water suspension makes the use of the spray preferable. Better results were obtained when the derris-root powder was used in water alone than when it was used with powdered soap, or with any spreader or sticker. Derris remained in suspension satisfactorily, it adhered well to the treated foliage, and it had as lasting an effect as any material tested to date. The water suspensions of the ground derris root were superior to and more economical than the extracts of either derris or pyrethrum, or a combination of the two.

Cryolite (sodium fluoaluminate) at the rate of 3 pounds to 50 gallons of water has given results equal to those with magnesium arsenate at the rate of 2 pounds per 50 gallons of water, when applied properly, and before the pods form on the plants. Consequently, cryolite is now recommended in preference to magnesium arsenate, especially since the latter has occasionally caused foliage injury in recent tests.

In the dust form, the derris-root mixture containing approximately 0.6 per cent. rotenone gave best results, with talc, tobacco dust, infusorial earth, ground marc, or clay as a diluent, applied at the rate of 20 to 25 pounds of the dust mixture per acre. The tests of 1934 demonstrated that talc is probably the best diluent for derris-root powder, although additional tests will be necessary before definite conclusions upon this point are reached. Hydrated lime should not be used as a diluent with derris-root powder since it reduces the efficiency of the insecticide.

Field sanitation: In the control of the Mexican bean beetle the destruction of the crop remnants after harvest is as important as thorough and timely spraying or dusting. Plow under all plant remnants in the field to a depth of at least 6 inches.

Bean leaf beetle, green clover worm, flea beetles, and other leaf-feeding bean insects may usually be controlled by following the recommendations made for the Mexican bean beetle.

Celery Insects

Celery leaf tier: The celery leaf tier periodically becomes troublesome in the North and is a major pest of celery in the Florida producing area. This pest can be controlled by careful treatments with pyrethrum dust, the dust being mixed with an equal quantity by volume of tobacco dust or hydrated lime. Tobacco dust has proven more satisfactory than other materials as a diluent and is recommended. The treatment consists of making two applications within a period of one-half hour. The object of making the second treatment within such a period is to kill those worms which have moved from their webs as a result of the first treatment. Approximately 25 pounds of the mixture per acre are necessary for each application. Except under unusual conditions one treatment—that is, two applications with a half-hour interval—is sufficient to protect any given field of celery.

Arsenicals are not satisfactory as a control for this pest and are not recommended.

Field sanitation: The cleaning-up of the crop refuse after harvest is a valuable aid in the control of these celery pests, particularly in the instance of the celery leaf-tier.

Celery looper: Several species of loopers attack celery. These pests succumb readily to treatments of pyrethrum powder as recommended for the celery leaf-tier, and arsenical applications are not necessary.

Cutworms: The use of an arsenical bait is the only practicable means for the control of the majority of the species of cutworms attacking celery. The risk from poison residue can be eliminated by the distribution of one of the standard cutworm baits between the celery rows, provided care is taken to keep the bait from falling on the plants.

Pepper weevil: While the pepper weevil can be controlled by treating the crop at regular intervals with undiluted calcium arsenate, this method is not to be recommended unless the residue can be adequately removed by washing. Then, too, the regular treatment of the crop with calcium arsenate may result in heavy infestations of plant lice which are capable of causing more crop loss than pepper weevil infestation.

For conditions which obtain in California, cultural control is recommended. This involves complete destruction of pepper plants after harvest, and also the clean-up of nightshade plants in the vicinity of the pepper fields, the nightshade being a favorite winter host of the pepper weevil. The pepper fields should be plowed at least by January 1 and all nightshade plants destroyed by the 10th of January. This gives a period between the destruction of the winter host plants and the planting of the seed bed in excess of the time during which it is possible for pepper weevils to live on other than their normal host plants. No experiments have been conducted on the control of the pepper weevil in New Mexico or Texas, and no recommendations are made for the control of this pest in these two States.

Squash Insects

Melon worm and pickle worm: Studies in the control of the melon worm and the pickle worm, especially on fall-grown squash of the cocozelle type, in South Carolina, have indicated that a derris-powder mixture containing from .5 to 1.5 per cent, rotenone (in cases of light infestations the .5 per cent. dust should be sufficient if applied early and regularly) will satisfactorily control these pests. Where the infestation is heavy the 1 or 1.5 per cent. dusts should be used. Sulphur seems to be the most effective diluent for melon and pickle worms, possibly because of some action against young larvae. The addition of from 10 to 25 per cent. of talc, clay, or wheat flour, or finely-ground tobacco dust, to the derris-sulphur mixture will improve its dusting qualities.

The treatments should begin when the worms first appear on the leaf buds of the squash plant, which may be within a week or ten days after the plants appear above ground, and be continued at 7 to 10-day intervals as long as the worms are present or the crop is being harvested. The rate of application will depend upon the size of the plants, and should range from 15 to 25 pounds per acre. Extreme care should be exercised to see that the growing tips of the plants are well covered with the dust, as the worms fed extensively on the young leaf buds before tunneling into the fruit, stem and vines.

Pyrethrum powder has also proved of value in the control of these pests. The pyrethrum powder should be used in a mixture with clay or talc and sulphur, equal parts of the pyrethrum and the diluent being used.

Paris green and cryolite may be used to advantage in early treatments. In order to avoid danger of poisonous residues on the market product, treatment with these materials should not be made after the fruit has begun to set. The Paris green should be diluted with sulphur and lime in the ratio of 1 pound of Paris green, 4½ pounds of sulphur, and 4½ pounds of lime. The addition of lime to the mixture is necessary in order to reduce the danger of injury to the plants. The cryolite may be mixed with clay and sulphur in the ratio of 1 pound of cryolite and 1 pound of clay to 3 pounds of sulphur.

Calcium arsenate has not proven satisfactory as a poison for the melon and pickle worms.

A bellows-type duster is more satisfactory for the treatment of the squash crop than one of the rotary type because of the method of planting and also because of the necessity of applying the material directly to the growing tips of the plant.

Lettuce and Spinach Insects

There are several leaf-feeding forms which may attack lettuce and spinach and on occasions cause considerable damage. Pyrethrum or derris is recommended as a substitute for the arsenicals in order to safeguard the health of the consumer.

Tomato Insects

Tomato hornworm: In attempts to devise non-arsenical insecticide treatments for the tomato hornworm unsatisfactory results were obtained with compounds containing derris or pyrethrum. This insect was unusually abundant in certain sections of the East during 1934.

Cultural methods and other controls: Fall plowing is very effective in reducing the number of overwintering pupae of the hornworm. Hand-picking of the worms can be practiced to advantage where the acreage is limited and when low-priced labor is available.

Considerable progress has been made in an attempt to control the hornworm moths by means of a special poison feeder containing tartar emetic as a stomach poison with amyl salicylate as an attractant.

Tomato fruitworm: Preliminary tests with compounds of derris and pyrethrum against the tomato fruitworm (known as the corn earworm when it attacks corn) have shown that these materials were ineffective, and up to the present time no entirely satisfactory method for the control of this pest has been devised. Dusting with an arsenical such as calcium arsenate will prevent damage to some extent. Experiments have shown that treated plots yield about 50 per cent. more undamaged tomatoes than untreated areas. The calcium arsenate and hydrated lime should be mixed in equal parts.

The treatments should begin early in the season and the dust applied directly to the terminal shoots and also to the blossom stalks, as it is on these parts of the plants that the newly-hatched worms feed. The object of these treatments is to kill the worms before they migrate to the fruits to feed. The treatments should be made at weekly or 10-day intervals until the first fruits are about half grown, when treatment will have to cease because of the danger of poisonous residues occurring on the fruit. If all fruit is carefully washed or wiped before being marketed or consumed, it is likely that treatment may be safely continued until a somewhat later date.

Much injury can be prevented in small plantings if infested fruits are picked and destroyed. The worms are restless, shifting from one fruit to another, so one worm may spoil many fruits.

PRICE TRENDS AND OUTLOOK FOR MARKET VEGETABLES

By GUSTAVE BURMEISTER

Agricultural Economist, U. S. Bureau Agricultural Economics

The market outlook for vegetables generally during 1935 appears to be a little more favorable to growers than it has been in several seasons. Wholesale food prices are now 17 per cent. higher than they were a year ago, and the greatly-reduced supplies of such staple foods as meat, dairy products, and poultry products are likely to result in a stronger demand for fresh vegetables through most of the spring and early summer months. Owing to the drought in many producing areas during 1934, the commercial production of most canned vegetables was not much more than enough to take care of consumption needs until the new crops are available. The carry-in stocks of most canned vegetables in 1934 were very small, so that practically all of this season's consumption has to come out of the 1934 production. It is probable that the carry-over at the end of this season will also be very small. These short supplies are likely to strengthen the demand for fresh vegetables that are marketed next summer.

On the other hand, the production of vegetables in home and local gardens, which has made such rapid and marked advances since the beginning of the depression, is likely to continue to expand in 1935. Production of these vegetables in 1934—from a national standpoint—was, no doubt, greatly curtailed because of the drought. The quantity of home-canned vegetables likewise was reduced, and this probably will result in a greater demand for shipped-in supplies until the 1935 garden crops are available. The drought-stricken Middle Western States, then, are likely to draw heavily upon the early Southern States and lessen, to some extent, the crowding of vegetables on the Eastern markets.

A very important factor influencing vegetable prices, however, is the level of consumer purchasing power in the urban districts. With production of most commercial vegetable crops during the past few years at or near record high levels, an increase in consumer buying power would be more of a factor in raising vegetable prices than anything else. From 1929 to 1932 factory payrolls for the country as a whole declined more than 60 per cent. and industrial production more than 50 per cent. During 1933 and 1934 there was some recovery, particularly in the durable goods industries. The Federal Reserve Board's index of industrial production increased from 59 per cent. of the 1923-25 average in March, 1933, to 99 per cent. in July, and then declined to 72 per cent. in November. During the following six months it increased to 86 per cent., but from May to September, 1934, declined to 71 per cent. By December, 1934, industrial production had made some recovery and, according to many sources, business in the country as a whole is showing rapid gains since the turn of the year.

The improvement in industrial production has resulted in more employment and larger incomes for industrial workers. During the first three months of 1933 an index of incomes of workers engaged in factories, mines, and on railroads averaged only 39 per cent. of the period 1924-29. The marked improvement in industrial activity during the summer of 1933 was accompanied by an increase in these payrolls to 55 per cent. in September, and, after a slight recession during the next three months, the index again increased to 63 per cent. in May, 1934. There was another recession to 55 per cent. in September, 1934, but industrial payrolls are again rising. Other consumers also received larger incomes during 1934. Farm incomes, including rental and benefit payments, are expected to average about 20 per cent. more than in 1933. Also, debt burdens have been relieved somewhat through the various refinancing programs, and much of the debris of the 1929 crash is being cleared away.

As for consumer incomes in 1935, there are prospects for further moderate improvements. Incomes of industrial workers are now averaging about 15 per cent. higher than a year ago and are expected to be above the past year during most of 1935.

Inasmuch as we do not have adequate statistics of production, marketings, prices, etc., of the market garden area around Baltimore, there is little specific information that I can give you regarding them. However, we do have information concerning the commercial shipping areas that compete directly with you in the Baltimore market and which supply the nation as a whole with a great volume of what we term "vegetables for fresh market shipment."

As indicated by the chart, the trend of the acreage of the seventeen important vegetables for fresh market shipment in all producing areas during the past fifteen years has been sharply upward, with the only major reversal occurring in 1933 when the acreage was decreased about 10 per cent. From 1923 to 1932 the average rate of increase was 7 per cent. per year. The record high peak in 1932 was followed by the 10 per cent. reduction in 1933 and by a 6 per cent. increase in 1934, the latter indicating that, perhaps, the steady upward trend has been resumed.

As the acreage of these vegetables was increased, production also was increased, but, due to slightly declining yields per acre, production did not increase quite as fast as the acreage. The production index has remained at a fairly stable level during the past six years. It has fluctuated between 107 per cent. and 119 per cent. of the 1924-29 average, and this may indicate that, for the country as a whole, the combined production of these vegetables has about reached a ceiling. However, if consumer purchasing power rises during the next few years and prices of vegetables recover, it is likely that the upward trend of production will be resumed.

The trend of per-acre yields of these vegetables has been downward for the last fifteen years, reaching a record low point in 1933. Average yields declined about 20 per cent. during the decade ended in 1931, but since

1931 the rate of decline has been much slower. Since the average yield per acre in 1934 was somewhat higher than for the three preceding years, it seems probable that the rapid downward trend has been checked.

Prices received by producers of these 17 vegetables have been declining since 1923, the decline amounting to about 40 per cent. between 1928 and 1932. During the past two years prices have recovered about 10 per cent. of the previous decline. With both yields and prices declining, the average value per acre dropped almost 50 per cent. from the early 1920's to the early 1930's. In 1934 producers received an average of $106 per acre for these 17 vegetables, compared with $100 in 1933, about $96 in 1932, $118 in 1931, and $180 per acre in 1928.

So much for the trend of the vegetable industry of the country as a whole. In the areas that compete directly with the market garden crops produced for the Baltimore market—namely, North Carolina, Virginia, Maryland, Delaware and New Jersey—the acreage and production of commercial shipping vegetables continued to expand through 1933 and 1934, and prices received by producers declined sharply. The last year was characterized by a record high acreage and production in these States combined, and by the lowest average prices ever received. However, despite the low prices, the gross returns in 1934 slightly exceeded those of 1933, which were also larger than the record low returns of 1932, indicating that perhaps the tide has turned and that producers in these areas may expect further improvement in their total receipts. In these areas average yields of most vegetable crops were the highest since 1929 and, although prices were the lowest of record, the gross return per acre averaged slightly better than in 1933 and about the same as in 1932. However, it was about 47 per cent. below that of 1929, when yields were slightly higher and prices were 83 per cent. higher than last year. In other words, the depression has caused a total decline of 45 per cent. in prices and 47 per cent. in the average value per acre in the areas that compete directly with your own production.

The 1929 census indicates that, from an acreage standpoint, snap beans, cabbage, sweet corn, lettuce, green peas, spinach, and tomatoes are the more important crops produced in and around Baltimore. During 1934 the snap-bean acreage in the five competing States totaled 37,320 acres, or about 26 per cent. more than in 1933. As a consequence, production was very large and growers received an average of only 51 cents per bushel, compared with $1.01 in 1933 and 60 cents in 1932. The low prices of 1934 are likely to result in some curtailment of plantings in these States during 1935, which will lessen the competition with the nearby producers.

The cabbage acreage in North Carolina, Virginia, Maryland and New Jersey totaled about 12,720 acres last year, or slightly less than in 1933, but about the same as the average for the last several seasons. Yields were slightly higher than in 1933 and production was somewhat greater. Producers received very low prices, however—only $12 per ton, because of the tremendous supply of cabbage produced in other States that market at the same time. From the standpoint of production, 1934 was a *big* cabbage year; there was more cabbage than could be marketed through most of the year. In 1933 the cabbage producers in these States received an average of $22 per ton, and in 1932 about $25 a ton. As a result of the low 1934 prices ($12 per ton), it is probable that the acreage of cabbage in this general area also will be reduced in 1935.

Very little information is available as to the production and prices of sweet corn for market shipment, grown in this area. The only statistics we have are for New Jersey, where, in recent years, the acreage and production have increased materially, the latter reaching a peak in 1934. Prices to producers have declined almost steadily since 1928 and reached a record low level of $9.70 per 1,000 ears in the last year.

The lettuce acreage in the States of North Carolina, Virginia and New Jersey has trended downward in recent years and totaled only 1,760 acres in 1934, or 31 per cent. below that of 1933, which was about the average for recent years. As a result of the decreased acreage, production was relatively small and prices to growers in these States averaged $1.42 per crate, or well above the prices of the three preceding years. It is probable, therefore, that 1935 plantings of lettuce in this area will be increased considerably.

The acreage of green peas for fresh market shipment in North Carolina, Virginia, Maryland and New Jersey was also reduced in 1934. It totaled about 7,730 acres, or around 12 per cent. below the already low acreage of 1933 and 1932. Average yields were slightly higher in 1934 than in the two preceding years and, although the acreage was decreased, production was slightly larger. Owing to the small supplies coming from other areas and to some improvement in demand, green-pea producers received the highest average price—$1.03 per bushel—in the last four years. These higher prices are likely to stimulate plantings of green peas in 1935.

During 1934 the acreage of spinach in North Carolina, Maryland, Virginia and New Jersey was reduced from that of 1933 by about 20 per cent. to a total of 6,470 acres. This was the smallest acreage in a number of years, and it resulted in a very light production, which tended to strengthen prices in 1934. Spinach producers in these four States received an average of 45 cents per bushel last year, compared with 39 cents in 1933.

The second largest acreage on record was planted to tomatoes in 1934 in these five Eastern States which we are considering. A total of 18,170 acres compared with 17,900 acres in 1933 and 19,580 in 1932, the record high mark. As a consequence, production of tomatoes in these States was at a high level, which resulted in prices to producers averaging about the same as in 1933. A slight improvement in demand offset the slightly-increased production. Since these growers increased their acreage in 1934 on the strength of 62 cents per bushel, it is probable that, with the same price in 1934, the plantings this coming season will also be increased.

In conclusion, it might be said that your most favorable opportunities, as far as lessened competition is concerned, may be found in the production of snap beans, cabbage, sweet corn and spinach. Of some of the minor vegetables, the market for beets and celery is expected to be favorable. Of course your returns will be affected somewhat by receipts from other States than those analyzed here, and these may change the prospect somewhat. For additional information concerning rail and boat arrivals, Baltimore market prices, etc., I refer you to our market news reporter, Mr. W. E. Harrison, whose office is located in the Customs House here in the city. Mr. Harrison issues (free) daily market reports on fruits and vegetables, which are worthy of careful study.

After considerable discussion of papers had taken place, President Eyler called for a report of the committees.

The Nominating Committee presented the following names:

President—W. N. Eyler.
Vice-President—W. P. Hotton.
Secretary-Treasurer—W. R. Ballard.
Directors—F. R. Todd, Elmer Koppelman, J. Richard Fitzell.
Director for Farm Bureau—Joshua Lynch.
Delegate to Farm Bureau—R. T. Merrit.
Director for Agricultural Corporation—William G. Lynch.

The report of the Nominating Committee was unanimously adopted.

The Auditing Committee reported the treasurer's books to be in order and showed a balance as of December 31, 1934, of $29.48. The report of the committee was adopted.

The Resolutions Committee presented the following report, which was adopted:

Resolutions

WHEREAS the Maryland Vegetable Growers' Association has enjoyed an unusually good program during their annual meetings, and

WHEREAS, it is felt that many vegetable growers could profit by attending these meetings and the Association would benefit by a larger membership, therefore be it

Resolved, That the Association express its sincere appreciation to all of the speakers who made this program possible, and be it

Resolved, That the Association express its gratitude to its secretary, Mr. W. R. Ballard, for his efforts in arranging the program, for his continued interest in the success of the Association, and for the preparation and issuance of the monthly news letter, and be it further

Resolved, That a continued and increased effort be made to build up the membership and the attendance at the annual meetings.

POTATO SHOW

The exhibit of potatoes while small was equal in quality to previous displays. A new class for commercial entries was added this year, and this in the future should stimulate increased entries. Through the courtesy of the Farm Bureau Federation a small appropriation was made available for a Junior class.

The awards made in the several classes are as follows:

Sweet Potatoes

Class Adult Commercial.
  First—Carl H. Smith, Salisbury, on Maryland Golden Sweet.
  Second—Carl H. Smith, Salisbury, on Bigstem Jersey.
Class Adult Certified.
  First—W. P. Hotton, Salisbury, on Maryland Golden Sweet.
  Second—Howard Hansberry, Wetipkin, on Bigstem Jersey.
  Third—E. W. Townsend, Salisbury, on Maryland Golden Sweet.

White Potatoes

Class Adult Commercial.
  First—Hubert Friend, Noyes, Maryland, on Smooth Rural.
Class Adult Certified Cobbler.
  First—W. A. Ward, Pocomoke.
Class Adult Certified Rural.
  First—Howard Schlossnagle, Accident, Md., on Smooth Rural.
  Second—Ray Geary, Grantsville, Md., on Russet Rural.
Class Adult Certified, Any Other Variety.
  First—Laurence Gilardi, Boonsboro, Md., on Katahdin.
  Second—William Cissel Simpson, Clarksville, on Dakota Red.
  Third—Samuel Hearn, Laurel, Md., on Dakota Red.
Class Junior Commercial Rural or Dakota Red.
  First—Albert Richter, Accident, Md., on Russet Rural.
  Second—Clark Schlossnagle, Accident, Md., on Smooth Rural.
  Third—Robert A. Shoemaker, Woodbine, on Dakota Red.
Class Junior Commercial, Any Other Variety.
  First—Roosevelt Gilardi, Boonsboro, Md., on Irish Cobbler.
  Second—Harry Porter, Jr., Oakland, Md., on Katahdin.
  Third—Robert A. Shoemaker, Woodbine, Md., on Irish Cobbler.
Class Junior Certified Rural on Dakota Red.
  First—Paul Miller, Accident, Md., on Smooth Rural.
  Second—Clark Schlossnagle, Accident, Md., on Smooth Rural.
  Third—John R. Jehle, Hyattsville, Md., on Dakota Red.
Class Junior Certified, Any Other Variety.
  First—John R. Jehle, Hyattsville, Md., on McCormick.
  Second—Harry Porter, Jr., Oakland, Md., on Chippewa.
  Third—Robert Underwood, Anacostia, D. C., R. No. 4, on McCormick.

REPORT
OF THE
Maryland Stockmen's Association
SIXTH ANNUAL MEETING
January 9, 1935
Baltimore, Md.

The sixth annual meeting of the Maryland Stockmen's Association was held at Baltimore, Maryland, on January 9, 1935. The morning session was called to order by Mr. J. W. Jones of Montgomery County, president of the Association. Mr. Jones briefly addressed the meeting as follows:

PRESIDENT'S ADDRESS

By J. W. JONES
Montgomery County

Ladies and Gentlemen: I think it is about time we were calling this meeting to order. I am pleased to see the attendance—it is not quite so good as last year, but I think we bid fair to have a good attendance later.

The dinner meeting will be held tonight at six o'clock. We hope it will be very splendidly attended. In fact, judging from what has been scheduled up to the present time, we think we will have a splendid attendance at Schluderberg-Kurdle's plant. I hope everybody here will be there. We will not be rushed as we were last year, as we had to come back here for the evening meeting, and we will have a good time out there.

A great many things have happened during the past year. We have gone through a lot of this "drought cattle" business; we had a lot of cattle throughout the State, and we made a good record. We took those cattle and fed them and sent them back to the Government in a much better condition than when they came to us. We are particularly proud of that. In Montgomery County we did not think we would be able to take care of a great many, but we did take 1,326 cattle. Two of them died of shipping fever, or something; one died from other causes not our fault, and one is sick now, but we turned back 1,322 of those 1,326 cattle in A1 condition, and we thought that was a pretty good record. They looked very different when we sent them back than when they came to us.

The other counties in the State did almost as well. I have been in communication with a number of men in several other counties in the State, and from the reports they give me I feel we will put up a record that will be hard to beat. That turned out to be a good thing for a great many of our farmers.

I do not know what we would have done as farmers if it had not been for the various Federal projects that have been put on, because I know two years ago when I approached the farmers to talk farming they had a long face, they did not want to talk to you, but that is not so any more. Now, when you meet a man, he looks encouraged; he feels that there is something in the future for him. I believe we are approaching better prosperity than we have had for some time, especially as far as the cattle business is concerned. I believe prices are going to advance rapidly. One of the good things to have now is a herd of beef cattle. We cannot compete with the dairymen along their lines. They were the last to get into this depression. They are feeling some of the results now, but I believe they are going to work out their problem.

So far as the horse business is concerned, in my section horses that were selling for around $65 to $75 are now bringing around $125 to $135; in some cases, some of them sell for $150 because of urgent need and scarcity of the stock. A very prominent gentleman in the horse business told me some years ago that the best thing we could do was to buy all the mares we could and raise colts, as there would be a large demand for them. I have not felt that I could do that, although I do raise enough colts to keep up the work on my farm.

As to the hog business, the scarcity of hogs is a serious matter; there is no question of that, but I think that is one of the lines of farming in which we can turn over more quickly than in any other, and I think that business is going to improve, so that there will be a possibility of profit there.

The other agricultural crops that we are raising are struggling to lift up their heads, and I think that farmers are better satisfied with what they are doing, and that they feel better able to meet the situation.

Most certainly, a great difficulty has been in the labor situation. As far as unemployment and things of that sort are concerned, I have known of a number of people who would like to have work done, but they are not willing to pay the amount that is required, forty-five cents an hour, though they would be willing to pay twenty-five cents. I tried to get that down to thirty cents an hour, but was not able to do it.

Now, I do not feel that I ought to take any more of your time. We have an excellent program, and I am sure you will agree with me that there are a lot of men here really posted and prepared to talk on these various subjects, so we shall proceed with the meeting as rapidly as possible. I do not want to head off any discussion—I want you to take just as much time as you want.

We have decided to switch the program a little, and take up the Cattle

Topics next. I find that is agreeable to the gentlemen who are to speak here. An address on "The Western Drought and Its Effects Upon Eastern Livestock Production" was to have been presented by James K. Wallace of the U. S. Department of Agriculture, but I understand it is impossible for him to be here, and P. V. Kepner of that Department has come to substitute for Mr. Wallace. I am sure we will feel no regret in having Mr. Kepner with us today, and we will be glad to hear from him.

MR. KEPNER: Gentlemen, it certainly was a surprise to me late Monday evening to have a telephone call notifying me of the fact that this group was to meet, and that my good friend, James K. Wallace, who was to speak to you, would be unable to be present, and that I was to pinch hit for him. I feel that it is very much your loss that J. K. could not be here, as he is much more intimately acquainted with the situation, for he has had an opportunity to travel a great deal through that territory.

THE 1934 WESTERN DROUGHT AND ITS EFFECT UPON EASTERN LIVESTOCK PRODUCTION

By P. V. KEPNER
Senior Extension Economist
United States Department of Agriculture

The effects of the 1934 drought upon the livestock situation in the entire United States have been so far reaching that any consideration of the current situation and immediate future of the livestock industry in any area must involve a consideration of this national disaster. Although the drought itself was not nation-wide, the effects of it have penetrated into every State in the Union and affected to a greater or lesser degree the livestock industry of every State. These effects are largely of a twofold nature: First, a material reduction in the supply of feed available, which in turn has had a decided effect on the price of feed; and, second, in the reduction of livestock numbers. This reduction has come about either through death losses in the most severe drought areas, sale of distressed stock to governmental agencies, or liquidation of herds through regular commercial channels, either because of lack of sufficient feed or the cost of feed being too high to justify its purchase for livestock feeding. No one of these methods of liquidation has as yet reached its end as an aftermath of the 1934 drought.

Governmental agencies are still attempting to reduce the severity of the effects of the drought through purchase of stock in distressed areas. However, this activity is apparently almost completed. Likewise, the Government is attempting to lessen the shock of this calamity by sponsoring the conservation of poorer grade roughages and also through the establishment of the deficiency feed agency to import Canadian hay. The effects of scarcity of feed will not be fully ascertained until another crop season is reached as the balance between livestock numbers and feed supply over the country as a whole is quite uneven. If the winter season should prove to be severe, death losses in herds may prove to be quite heavy. In all probability in much of the area west of the Mississippi breeding herds will be, in general, in poor condition at the end of the winter season, and the spring calf crop and lamb crop will no doubt be materially affected by this lowered vitality of the breeding herds. Likewise, the unfavorable ratio between feed prices and livestock prices which prevails at present will result in some further liquidation of breeding stock. Hence we see that insofar as results of the drought are concerned the total cost to the country in terms of livestock numbers lost cannot as yet be determined. In attempting to visualize the future results of this almost nation-wide drought, and more particularly the effects of the situation upon the Eastern livestock industry it will be necessary to take stock of the situation as it prevails at present.

Recent reports by the Bureau of Agricultural Economics indicate that the production of feed grains in 1934 amounted to approximately 60 million tons—or only 46 per cent. of the five-year average. When all supplementary grain feeds are taken into account, including stored supplies from previous production and by-product feeds, the total amount available for the current season is only 55 per cent. of the nine-year average. Despite the heavy reduction which has occurred in livestock numbers the total amount of feed grains available per grain consuming animal unit is approximately 20 per cent. less than the short supplies of last year. And these supplies are unevenly distributed over the country, thereby increasing the seriousness of the situation.

The situation as regards hay and other roughages appears somewhat more satisfactory, although again being serious because of extremely short crops in the heavy livestock producing areas. The seriousness of this shortage of roughage has been accentuated by the very poor pasture and range condition prevailing, particularly in the Rocky Mountain States and the range States immediately adjacent to the eastward.

Total hay production for the country has been estimated at approximately 58 million tons or 69 per cent. of the five-year average. When we add to this year's production of hay the equivalent of approximately 20 million tons of sweet sorghum roughage and silage, we find that the supplies of these roughages are approximately 77 per cent. of the nine-year average.

Although with the reduced numbers of livestock in the country this apparent supply, abetted by the poorer grade roughages, would seem to be fairly adequate for the county as a whole, we are again faced with the practical problem of getting some of this feed from surplus to deficit areas. In many instances the distance involved is such that the transportation costs makes such removal of feed impractical. The activities of the "Agency for Deficiency Distribution" in importing feed from

Canada will probably be of help in the border States only. The roughage problem still remains a very serious one, particularly in the Missouri River States and Oklahoma and Colorado.

In summarizing the feed situation in relation to livestock numbers the picture is somewhat as follows: If we are to carry our present livestock inventories through to another crop season we are faced with a deficit of approximately 3,000,000 tons of feed grains and 1,600,000 tons of roughages. And we should not lose sight of the fact that the nation's feed troubles may not all be over with the harvesting of another crop. The loss of new seedings and the acute shortage of grass seed available for another year leads into the possibility of a short crop of the usual hay crops in the 1935 season. This situation demands a careful co-ordination of all existing agencies to conserve the supplies available to the greatest degree possible in order that our sharply reduced livestock numbers as of the present may not be still further reduced. One of the gravest problems facing the livestock industry at present is the maintenance of its breeding herds.

What has been the immediate result of this drought situation on our meat producing livestock industries? Although the official estimates of livestock numbers as of January 1, 1935, will not be available for some little time, it is probable that the combined numbers of cattle, sheep and hogs on farms January 1, 1935, will be found to be smaller than at any time since 1899.

Cattle numbers have been on the increase since the last low point in the cycle of cattle numbers in 1928, when there were estimated to be 56.7 million head on farms on January 1. This number was increased to 67.4 million head in January, 1934, but the liquidations of the past 12 months have so reduced cattle numbers that it is anticipated the number on farms on January 1, 1935, will not be in excess of the 1928 low figure. In other words, all the gains in inventories of the previous six years were wiped out in one. This decrease in numbers of approximately 10.5 million head in one year has been very largely influenced by the purchases by governmental agencies to date of something over 7.7 million head. However, if the Government had not stepped into the breach and purchased these cattle a large percentage of them would have been lost before spring because of inadequate feed supplies.

As with the reduction in feed supplies the reduction in cattle numbers has been unevenly distributed over the United States. The heaviest reductions have occurred west of the Mississippi, with the exception of the Intermountain and the Pacific Coast States. It is not anticipated that the numbers of cattle on farms east of the Mississippi will be materially changed from last year.

A further factor worth noting in relation to these reduced numbers is the fact that the slaughter of female cattle has been relatively greater this year than in any other class of cattle with the possible exception of calves. Therefore, of the reduced number now on our farms there are proportionally less breeding stock than in previous years, a factor tending to slow down the recouping of our losses in cattle numbers. We can thus foresee for the next few years an abnormal distribution of cattle in this country and but little possibility of increasing numbers until in 1936 or later.

For the immediate future the number of cattle for slaughter is expected to be greatly reduced and finished cattle will probably be very scarce during the next twelve months. The extent of feeding operations during this winter are difficult to predict, although it is fairly certain that such operations will be greatly reduced in the western area with the possible exception of California. The movement of stocker and feeder cattle into the corn-belt States in the late summer was large, being two and one-half times greater in July, August and September into the five eastern corn-belt States than during the same period in 1933. In the western corn-belt States, Iowa and Minnesota also acquired more cattle than were received during this three-month period a year earlier. However, the total movement into the corn-belt States from July to November was slightly less than last year and was the smallest on record. The character of shipments from the four large markets indicates that a large percentage of these shipments were of stocker nature rather than feeder stuff. Shipments of heavy steers were much smaller than the small shipments of the previous year, while light steers, calves, cows and heifers increased in number.

Sheep numbers on farms are expected to be very materially less on January 1, 1935, than they were a year previous and the bulk of this reduction will be in the western and southwestern sheep States. But little reduction is expected in the native sheep States.

Sheep numbers experienced a steady increase in the United States from 36.7 million head in 1923, the last low point in the sheep numbers cycle, until 1932, when the all-time high in sheep numbers of 53.2 million head was reached in this country, and have declined each year since. Since feed and range conditions are both poor, and inspected slaughter plus shipment to feed lots for eventual slaughter are large, the lamb crop for 1935 is expected to be the smallest for several years. This reduction in breeding flocks will also result in the smallest wool clip in several years. However, the relatively large supplies of wool available in this country will tend to offset this reduced production during the ensuing wool marketing year.

The effect of the drought on the hog situation has been abetted by the adjustment program for corn and hogs, and hog numbers on January 1, 1935, are expected to be 35 or 40 per cent. less than on January 1, 1934. The slaughter supplies of hogs for the marketing year beginning October 1, 1934, are likely to be the smallest in twenty years. As in beef cattle and sheep this reduction in numbers is not uniform, as indicated by the fall pig crop report recently released, which indicates that there were only 45 per cent. as many pigs saved in the North Central States this fall as compared to the fall of 1933. As opposed to that both the South Atlantic and North Atlantic States showed fall pig crops approximately 82 per cent. as great as in the fall of 1933.

How does this national situation regarding feed and livestock affect the eastern livestock producer?

In the first place it has temporarily placed the eastern livestock producer, as well as all other livestock men, in an unfavorable position because of the high feed prices which now prevail and the current relatively low livestock prices which have resulted in part from the heavy liquidation of herds because of the drought. On the other hand, the Eastern livestock man is in a more favorable position than his western competitor because he has a feed supply, particularly roughage, readily available and is not faced with death losses or enforced liquidation because of failing feed supplies. Neither has he experienced heavy inroads into his breeding herds because of this drought situation. Consequently, although he may not be able to see an immediate profit with feed prices at their present level he is left in a favorable position to help meet our currently developed deficit in breeding stock when feed prices once more become more nearly in line with livestock prices.

Given a normal yield of crops in 1935 a very material reduction in feed grain prices can be expected by the next harvest season. On the other hand, because of our very seriously depleted livestock inventories and greatly reduced livestock slaughter in 1935, livestock prices can be expected to make decided increases. This is particularly true of cattle, hogs and lambs. Prices of breeding sheep may not experience as great increases as the other classes of livestock since wool prices may not make material advances unless there is a considerable improvement in the woolen goods industry. It becomes apparent then that, although the drought has temporarily penalized the livestock producer of the east through increasing the prices of feeds, this disadvantage is probably only a temporary one. It would appear that for the next few years the livestock producer of the east will be in a relatively more favorable position as compared to his Western competitor than has been the case for a number of years.

CHAIRMAN JONES: I am sure we have all enjoyed the talk very much. It has been very enlightening. Now we have one more topic on this particular subject, and then we want to go into the round table discussion. I am going to have to ask you gentlemen to confine yourselves to not more than 15 minutes for the principal speakers, so that we will be able to get through this program.

We will next have "Suggestions on the Bang Disease Campaign," by Mr. W. A. McGregor.

SUGGESTIONS CONCERNING BANG'S DISEASE

By W. ALAN MCGREGOR
Manager, Andelot Farm
Kent County, Maryland

It is not my purpose at this time to enter into a long discussion of the merits or demerits of the blood test as a means of controlling Bang's disease. In a general way, I believe the blood test is of value to our cattle breeders in pointing the finger of suspicion to animals which may be harboring the germ in their systems, and which may be spreaders of the disease. When a herd is tested the owner can, with some degree of accuracy, segregate the animals which may be spreaders of the disease from those which are apparently free from the disease and thus protect himself to some degree from losses year after year. There is nothing in the blood test that will cure the disease or that will tell which cows will abort and which will calve normally. The only thing the blood test will tell you is which cows may be harboring the disease and may spread it through the rest of your herd.

Under the State law of Maryland we are able to have our cattle tested without charge other than the cost of our private veterinarian drawing the blood samples. We are then required to segregate our reactors, as shown by the blood test, from the non-reactors and keep each group separate. There is nothing compulsory about this test, and no one need test unless he wants to. However there is something that makes it almost compulsory to test if you are in the purebred business or in the business of selling cattle for breeding purposes. This is the fact that almost every State has laws regulating the importation of cattle for breeding purposes. In order to ship cattle from Maryland into any other State you must supply certificates showing that they are negative to this test.

There are a great many things I do not know about contagious abortion, but there is one thing, after ten years of experience with the blood test, that I do know and that is that a group of cows, all of which react to the blood test, may still be a very valuable breeding herd.

Every breeder who has ever blood-tested knows that some of his best and most regular producing cows will react. The unfortunate part of it is that the blood test takes all kinds. In carrying on a positive breeding herd the natural thing to do is to keep the best and get rid of the poorer producers. In a positive herd there is always a certain percentage of cows which fail to breed, abort or produce poor calves. It is logical and sensible to dispose of these and keep only the good ones. This we are able to do under our State laws.

Now the Federal Government has stepped into the picture. Under Order No. 347 the Government will blood-test your cattle, and all reactors must be sent for slaughter. For these reactors you receive the salvage value plus a maximum of $20 for a grade animal and $50 for a purebred. The catch in this is that every reactor must be slaughtered whether it be your best purebred herd sire or some of your best and most regular producing cows. Figure it out for yourselves. A bull will bring at the stock yards about $40.00; add to this maximum of $50.00 from the Government, and you receive a total of $90.00. This may be an outstanding sire that you could not replace for less than $300.00 to $500.00 even at present low prices. Every breeder has cows and bulls in his herd that are very valuable. Every breeder also has cows and bulls in his herd which for one reason or another could be gotten rid of. The breeder who tests under the Federal Government plan is in grave danger of losing the best animals in his herd.

We, as breeders, should be able to test under the Federal Government plan with the privilege of keeping, in a segregated unit, our most valuable breeding cows and bulls. At the same time we should be able to dispose of the animals we are willing to let go and receive the benefit of the payment from the Government. Some of our purebred associations have already passed resolutions calling on the Federal Government to modify their regulations to this extent, and I would like to present a resolution to this body as follows:

To the Honorable Henry A. Wallace,
Secretary of Agriculture,
Washington, D. C.:

Whereas B. A. I. Order No. 347 makes it compulsory for any breeder, who tests under this order, to send for slaughter any and all animals which react to the blood test, and whereas we as members of the Maryland Stockmen's Association, by experience with the blood test and through knowledge of the experience of others, know and believe that the majority of animals which react to the blood test for Bang's disease may still be valuable and efficient breeders, hereby request that a modification be made in B. A. I. Order No. 347 as follows:

(1) That any breeder testing under B. A. I. Order No. 347 shall have the right to set up an isolated unit, satisfactory to the authorities, in which he may keep, for breeding purposes, any and all animals reacting to the test, that in his opinion are of special value as breeding animals.

(2) That only the animal or animals shall be sent for slaughter, which, in the opinion of the owner, can be eliminated from the herd, without a distinct loss to the breeding herd and the cattle industry.

(3) That any animal or animals so kept in a reactor or isolated unit, may at the discretion of the Government, be branded or otherwise marked and that such animals must never again be put in with animals who have tested negative to the blood test.

(4) That any cow soon due to calve or with calf at foot, which may react to the blood test, may be kept in the reactor or isolated unit until such time as the calf is ready to wean.

(5) That animals which react to the blood test and are designated for slaughter may be kept in the isolated unit until such time as, in the judgment of the owner, they are fat enough to go for beef.

Mr. Chairman, I move the adoption of this resolution.

MR. GRANVILLE LEWIS of St. Mary's County: I will second the motion.

MR. M. C. SHERMAN of Queen Anne's County: I would like to ask if the isolated cattle—the isolation that Mr. McGregor proposes, includes only registered cattle or grade herds?

MR. MCGREGOR: It includes all cattle.

MR. SHERMAN: I have had eight years' experience in blood-testing, not as many in numbers as Mr. McGregor, but I can absolutely join him in the statement that you can raise clean cows from reacting cows. Whether or not this test is a good thing depends upon the individual, the size of his farm and the number of cattle, the type of cattle. It seems to me that the plan set out in the resolution would give more leeway. In certain cases it would be a great advantage for the breeder to be allowed to keep his reacting cows in segregation if he is fixed to do it and wants to do it. On that basis I am in favor of it. I would rather see the resolution limited to registered cattle.

MR. JOHN D. ROOP, JR., of Carroll County: I think that Mr. McGregor's resolution is probably one of the best things we could have, and I am for it. It might save some of the future foundations of our herds.

MR. MCGREGOR: That is the proposition.

CHAIRMAN JONES: Any further discussion?

Thereupon the motion was put to a vote and was carried.

CHAIRMAN JONES: Mr. M. C. Sherman, of Queenstown, will lead the discussion on these papers.

MR. SHERMAN, of Queen Anne's County: Mr. President, Ladies and Gentlemen: Frankly, I admit that I do not know just how to lead this discussion, and I do not have any prepared manuscript. But in spite of that, and in spite of the fact that there are others much better qualified right here in the room, I will try to make a few remarks about establishing and managing breeding herds of beef cattle in this section. These remarks are based on our own experience, dating from 1927, and from my observation of other herds in the State.

We will have to skip over a lot of the points because the time is short, but in starting a herd, it is well to go over the farm that it is proposed to be carried on, and make sure that it is suitable for cattle. A farm to be suitable for cattle must be able to produce crops for the cattle—roughage, pasturage and feed that they must have, and also should have an adequate water supply and a proper amount of shade. Shade is extremely important. Without natural shade, of course, it is possible to provide some artificial shade, such as sheds or covers of that sort.

Now, passing on to the matter of equipment. The equipment may be very simple. I think experience has shown that; it has certainly shown me. I did not believe it in the beginning, but it is true. Outside feeding is best from the health standpoint. There should be plenty of feeding space. The matter of buildings is not nearly as important as the matter of feed. If the cattle have plenty of feed they will get along with almost no buildings.

In starting a herd and buying foundation stock, it is very important to see that the farm has feed on hand before the cattle are put on the farm. I have known of a number of cases where cattle and other animals have been secured, and then it has been found that the feed on hand for their first winter was not sufficient to keep them in proper condition. The feed should be there first, and the animals second.

In choosing a foundation of beef cattle, a person might approach it from the point of view of grade animals or purebred animals, and the difference in investment, of course, has to be taken into consideration. From the results that have been obtained in this State, I think there is evidence that, if possible, the breeder is better off to use purebred, registered animals of the highest possible quality. If that is not possible, then he should start with one or two purebred heifers of high quality and gradually build up a good purebred herd. The bulls used must be good in every way. There is no use trying to get a good herd with poor bulls; it cannot be done. Everyone ought to think of that. We have all seen where the introduction of one or two really top animals has changed the entire picture of a farm. In buying, it is much better to buy best. This is really very important. A lot of people do not seem to recognize the actual difference in results obtained from top animals and just ordinary ones. We have an example here in this State of the Bedford herd. We certainly have Mr. and Mrs. Bedford to thank for an example of what can be done with quality stock. You are probably familiar with their herd, and their record in showing stock at the fairs. Their efforts are paying them in actual dollars and cents as well as in the satisfaction of knowing their herd is good. Everyone who is trying to start a herd should know that the bull question is absolutely vital. I mean you might have fine heifers and not get good calves if the bulls are poor. Fortunately, good bulls are available in most sections of this State. We are very fortunate in that. In this State the breeders of Angus cattle have bulls available, fine bulls of good quality.

Of course there are a lot of details that I cannot go into now in building a herd. One thing, the herdsman is a mighty important factor.

More than anything else, he must have a reasonable amount of intelligence, but even more than that he must be interested in the cattle; he has got to like cattle. It is very easy to be fooled on that point. Some men will put up the bluff that they like cattle when they really do not. The real test is whether they will put their own convenience, their own pleasure, before that of the cattle—if they do, they are not good herdsmen. That is an almost infallible test.

That covers the salient points, I think, of starting a breeding herd in this State. I might add that feed is a very vital factor. Good feeding will make poor cattle better, and good cattle still better, and poor feeding will spoil any of them, no matter how good they are to start with. The breeding herd itself needs plenty of roughage. In the winter they need some grain, in the form of silage or in some other form; of grain they do not need much, but they do need plenty of roughage, either fodder or silage and hay, not too much hay, but a reasonable amount. It all depends on the crops on the farm and how they can be balanced up. You are all familiar with the fact that they need plenty of salt. They should have high-grade legume roughage. That is all very important.

Now I think that is about all I have to say unless there are some questions. I would like to have somebody bring up some discussion.

MR. ROOP: May I ask what is being done for mastitis in this State?

MR. SHERMAN: I do not know anything about that. Maybe somebody else in the room can answer you. I have not had any experience with that. It does not seem to be very general in beef cattle.

MR. JONES: Perhaps Dr. Brueckner can answer that.

DR. BRUECKNER: I know that under the program proposed they plan to include mastitis as well as Bang's disease and tuberculosis. That work in this State will be under Dr. E. B. Simonds. If Dr. Simonds were here, he could give you all the details of that.

CHAIRMAN JONES: We will next have the report of the Secretary-Treasurer, Mr. B. E. Carmichael.

Mr. Carmichael gave the following reports:

REPORT OF SECRETARY-TREASURER, 1934

During 1934 the work of the Maryland Stockmen's Association has proceeded in about the usual way. The fifth annual meeting, held at Baltimore on January 10, 1934, was well attended, and in point of attendance, program, and interest was perhaps the best meeting thus far held by the Association. Discussion of important questions characterized both the morning session held at the Lord Baltimore Hotel, and the dinner meeting held at the Congress Hotel. An innovation which seemed to meet with general approval was the group luncheon served in an adjacent room, so that the group could stay together during the noon hour and complete the program in the early afternoon. The dinner meeting session was rather shorter than usual on account of the need for finishing in time to return to the Lord Baltimore Hotel to hear an address by Hon. Henry A. Wallace, Secretary of Agriculture. Though it was with much regret that the program of the dinner meeting was hurried and somewhat shortened, there was substantial compensation in the thoughtful address which Secretary Wallace delivered, during the course of which he discussed at some length problems of much importance to stockmen.

Membership in the organization has grown substantially during the year and has reached a total of 119 as compared with 44 paid members in 1933. Though this is a desired development, it should not be regarded as a sufficiently large membership. In view of the diversity of interests represented by the Association's membership and the importance of the live stock industry in Maryland, it seems altogether conservative to hope for an early growth to at least 300 paid members. This can be accomplished soon and without much difficulty if each 1934 member of the Association will see to it that his own dues and dues from at least two additional active stockmen reach the Association Treasurer promptly.

In cooperation with the Extension Service of the University, five auction sales of purebred rams were held during the year. Throughout the years during which these sales have been held they have done much to bring breeders and commercial lamb producers closer together and have had a highly helpful influence upon the production of early lambs of uniformity and excellence. Many more good purebred rams should be produced by breeders of purebred sheep in Maryland and used in flocks used for commercial lamb production. Additional work by this Association is needed still further to promote a greater appreciation of the value of good sires, not only rams but all kinds of sires of Maryland livestock.

The *Monthly News Letter* has been sent out each month to paid Association members. This little publication should be improved and made to serve stockmen of Maryland in a much better way. This can be brought about if each member will make it a point to send to the secretary the following:

1. Definite suggestions concerning topics to be discussed in the *News Letter*.
2. Constructive criticism of material published in the *News Letter*.
3. News items concerning livestock activities about which stockmen of Maryland should be informed.
4. Statements concerning stock for sale or wanted, for publication in the *News Letter*.

A number of members have made helpful suggestions in the past. These aids are appreciated and are needed in larger numbers.

The Maryland Stockmen's Association has much work to do. Some good work has been done, but only a small beginning has been made, and there is an opportunity for doing much work in every section of the State "To Promote Maryland's Livestock Industry." Intelligent, enthusiastic, constructive, persistent effort will, in time, accomplish much, and Maryland stockmen can and should apply just that sort of endeavor to the problems now confronting us and to be faced in the future.

The financial statement for the year is as follows:

FINANCIAL REPORT MARYLAND STOCKMEN'S ASSOCIATION

RECEIPTS:		
Balance, January, 1934, meeting	$182.26	
Memberships, 1934	117.00	
Memberships, 1935	6.00	
Banquet tickets, 1934 (10 not used)	142.00	
Banquet tickets, 1935, 3 @ 85c	2.55	
Total, balance and receipts		$449.81
EXPENDITURES:		
Postmaster, College Park, postcards	5.00	
Congress Hotel, banquet	137.00	
Telephone calls, account annual meeting	3.25	
Univ. of Md. Press, cards, envelopes and tickets	15.00	
Expenses—Miss Rubye M. Bresnahan, helping annual meeting	1.25	
Expenses—Miss M. Lucille Hardiman, helping annual meeting	2.50	
Lord Baltimore Hotel, cake for lunch	5.00	
Students' Supply Store, mimeograph paper	5.00	
Postmaster, College Park, 550 3-cent stamps	16.50	
A. B. Dick Co., stencils	3.50	
Univ. of Md. Press, envelopes and printing	11.00	
Postmaster, College Park, 200 3-cent stamps	6.00	
F. H. Sowers, stationery and printing	14.30	
Maryland Farm Bureau Federation, annual dues	20.00	
Postmaster, College Park, 700 postcards	7.00	
Univ. of Md. Press, College Park, cards, tickets and envelopes	6.00	
Check tax, 15 checks	.30	
Univ. of Md., telephone, account of annual meeting	2,20	
Total expenditures		$260.80
Balance January 9, 1935		$189.01
Outstanding account, uncollected returns from ram sales		17.00
Total assets		$206.01

CHAIRMAN JONES: That is a very satisfactory report. What should we do with it?

It was moved and seconded that the report be accepted, and was so ordered.

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CHAIRMAN JONES: Next we will have the Rams Sales Report by Mr. J. M. Vial.

MR. JOS. M. VIAL, College Park: I have no formal report. We held five sales—at Pocomoke City, Centreville, Timonium, Boonsboro, and Oakland, and sold 64 rams at an average of $13.85 a ram. Several reasons have been advnced for the low price received this year. The time of the year for the sales may not be the best. It is possible they should be held later. Then, the change of management. I have not had the time to devote to it that I would have liked to give it. Some of you fellows might put your feet under the table and get together and help out in this work. I followed the good work of Mr. Kenneth Clark, but was not able to give as much time as I would have liked.

CHAIRMAN JONES: Next we will hear about "Cooperative Wool Marketing," by Mr. James M. Coon, of the Farm Credit Administration.

MR. COON: I certainly appreciate the opportunity of coming here to talk to you (then reading the following paper):

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COOPERATIVE MARKETING OF WOOL

By JAMES M. COON

Farm Credit Administration

Washington, D. C.

I appreciate the opportunity of being with you and I want to extend best wishes of the Farm Credit Administration.

Before discussing the cooperative marketing of wool, I might take you back to 1929 and 1930 and briefly outline the development of what I think was the most important step forward which has been taken by the wool growers in this country, the formation of a National Wool Marketing Association. This forward step by the wool growers is also one of the most interesting developments, even more interesting to me than the attempt which was made just prior to the war to introduce the Australian grading and selling system in this country. After possibly twenty-five years of effort, with financial difficulties, drastically fluctuating markets and dealer opposition, wool growers from all parts of the country were finally gotten together to work toward a common end in developing a sound national marketing system. The passage of the Agricultural Marketing Act in 1929 offered this opportunity for organization and the growers took advantage of it.

In December, 1929, the National Wool Marketing Corporation was formed, which had as its member stockholders nine existing wool marketing associations. During the next two years nineteen new associations were set up and became stockholder members of the corporation. At the present time there are thirty associations throughout the United States that are affiliated with the National. Your own United Wool Growers Association, of course, is one of them.

That part of cooperative wool marketing is now interesting history. Five hard-fought years are behind the growers in their battle for recognition in the marketing of their own product. The experimental stage is past, and the National is now recognized as a necessary permanent fixture in the domestic market.

You will be interested primarily in the development and progress of the fleece wool associations and some of the problems which have confronted these associations, as they will be similar in nature to your own problems in Maryland.

Wool production in Maryland may seem insignificant to some of you who are familiar with the large-scale operations in the Western States. However, at 25 cents per pound, the Maryland wool clip means an annual income in excess of $140,000.00 to farmers in the State. In spite of the small clips in the Eastern States, commonly called "fleece wool States," these farm-flock growers have received greater benefits from cooperative marketing of their wool than the larger growers in the range States. Approximately 103,000,000 pounds of wool, or nearly 30 per cent. of the wool clip in the country, is produced in the Middle-Western and Eastern States under conditions quite similar to those existing in Maryland. During 1930 and 1931 an attempt was made to find out what it had been costing farmers to market their wool. After many contacts and conferences with manufacturers, dealers, and country buyers, we arrived at the conclusion that the average spread between the price growers had received for their wool and the price paid by the manufacturer, was about 10 cents per pound. We have learned that since the cooperatives have come into the picture on a national scale, this spread has been cut practically in half, and the dealers are taking smaller commissions than heretofore.

Twelve of the thirty associations now marketing through the National are fleece wool cooperatives. This group of cooperatives has shown greater progress as a whole than the range State organizations. The growers themselves in the farm flock area have proven better cooperators than the large Western producers.

A recent study of operations of nine associations in the Middle-Western and Eastern States has brought out many things of interest, and I am going to discuss some of these with you. This study has shown the keenness with which the various cooperative officials have taken hold of problems incident to building up their marketing organizations.

1. The most difficult obstacle which confronted the associations has been to sell their members on the idea of taking conservative advances. Growers make the plea that, due to conditions, it is necessary that they receive the highest advance possible. To often the cooperatives have stretched a point to accommodate the grower. Nothing has caused more trouble in our wool organizations than too high advances. I am glad to

report that a great deal of progress is being made in this direction. Practically all of the associations now are down to the 65 per cent. basis of advance, and a few of the associations even report that it may not be necessary to advance quite this much in the future. I have a report from your own manager that many of the county pools decided to deliver their 1934 clip without any discussion as to what their rate of advance was to be.

2. Keeping the plan sold to the grower year after year has probably been the next greatest problem. I find that most of the associations are overcoming this by placing more responsibility on the grower. This is done by the formation of local organizations that are responsible to the State or regional association. We find that the closer you get your cooperative wool marketing to the farm, the more progress is made. I do not mean the formation of county pools that sell to the highest bidder, for in my opinion this method is not cooperative marketing. It is merely selling with the advantage usually in the buyer's favor. These pools often establish market price without consideration of the basic factors that really determine what manufacturers should actually pay for their requirements. Many of these local pools with a carload or two of wool, partially graded and sold to some country dealer, often work out as anti-cooperative in the long run, rather than cooperative.

If your same county organization will assemble your wool, turn it over to a legitimate selling organization where it will be marketed in an orderly manner, each clip to be sold on the merit basis, then you are developing a better coordinated sales system with much wider market outlets.

3. Delays in final settlement have been difficult to explain. It is hard for growers to realize that an orderly marketing system means selling wool through the selling season, as demand justifies. Many growers still contend that they would prefer to sell outright for what the local dealer will give, rather than wait several months for final settlement, even if a much better price were received. In order to overcome this feature, the National has worked out a plan known as the "unit marketing plan." Under this system it has been possible to make partial payments to those participating in the plan, regardless of whether each individual's wool has been sold. I will not go into the plan except to say that I believe it to be the most thoroughly cooperative way yet devised for the marketing of wool. It eliminates inequities from one pool having to sell at the low point in the market and another pool more fortunate that sold at the high point. At the same time each grower's wool is appraised and sold on its merits. Fifteen associations are now selling their wool under this one unit marketing plan. Two of these are fleece wool associations. I anticipate that in a few years' time, regardless of the average size of clips or types of wool received, every association marketing through the National will be selling their wool under this unit marketing plan.

4. Keeping costs of marketing at a minimum, of course, has been a major problem with most of the associations. The answer in most instances has been volume. With proper management, unit costs can be reduced as volume increases. Associations have found also, that by doing their own warehousing and handling, considerable savings can be made. The National itself has had this experience. In 1932, after two years of hiring their warehousing and selling done, they took over these function completely. Great savings have been made by this move. Your own association has had similar experience with its warehousing operations. These savings made by your local and your National association, are passed on to the grower.

Many associations are cutting costs by cooperating with livestock associations who operate in the same territory. Due to the fact that the same grower who markets wool also markets livestock, it has been found that one field man can talk both programs to the satisfaction of both organizations. It has been apparent in my study of the associations that those associations making the greatest progress are those that are working with the State Extension forces. The Extension group has been primarily responsible for the development of several of the most successful of our fleece wool associations. Where the interest and support of Extension forces have not been forthcoming, there has been little coordination in field work and membership activities with other cooperative activities, resulting in only a meager interest on the part of the growers.

A great many have the mistaken idea that their wool association should be only a selling organization. You should look upon your wool cooperative as a service organization, selling is just one function. Other functions of your local and National associations are to represent the grower in tariff proposals, establish research departments, work for the consumption of more wool, and, in fact, represent the grower in all wool matters.

As I have before stated, the experimenting period in wool marketing is over. Due to the opportune time which presented itself, the National was built from the top down. I believe the growers now feel that they are on the ground floor and are ready to put in more of the foundations that were omitted in the early stages of organization. Tonnage of the National dropped to a low of 40,000,000 pounds in 1933. This was a drop from 116,000,000 which was delivered in 1930. The 1934 receipts of the National were in excess of 60,000,000 pounds, or 50 per cent. over 1933, and I firmly believe that the tonnage of wool marketed cooperatively during 1934 represents the greatest really cooperative group of wool growers we have ever had. The tonnage delivered in 1930, we know, was not all cooperative wool, as the advance basis of 90 per cent. was the real attraction. Growers delivered their 1934 clip on a 65 per cent. advance basis.

A study of price movements should convince one that cooperative marketing should be favored over outright selling. I have carefully reviewed wool price movements from 1900 to 1934, inclusive. These movements show that in practically two out of three years wool prices either definitely sagged at shearing time, or were lower during the shearing period than they were at some time during the selling season. One fault from the grower's standpoint, in many instances, is that he expects his cooperative to accomplish the impossible. It has been demonstrated in practically every part of the United States that the cooperative is responsible for higher country prices. He should not also expect the cooperative, after being responsible for raising the price level, consistently to get 5 to 10 cents above the country price for its members.

The function of a cooperative is to return to the member a fair average price for his wool after allowing for necessary marketing charges and a reasonable amount for an association reserve.

An orderly marketing program levels out the drastic fluctuations and takes out of the market a good deal of the speculation. These elements in the market, in the past, have kept the wool grower guessing and often left him gasping.

Before closing, I would like to say that during the past year the Farm Credit Administration announced a policy rendering more assistance to cooperative organizations. In general the work will consist of gathering and disseminating information of various kinds, which will assist cooperative associations in solving all phases of their operating problems. The work will be directed to finding the best possible answer to current practical problems. Personally, I believe that the cooperative marketing of wool is sound, as the commodity lends itself readily to orderly marketing. As long as I am in the position to do so, I am going to work for the interests of wool growers' cooperative organizations. The plan I believe is here to stay, and greater progress is going to be made in Maryland as well as in other parts of the country.

CHAIRMAN JONES: I am sure we all appreciate Mr. Coon's work. He has been very helpful here in the State. We have asked Mr. William J. Hines of Brighton to open the discussion on sheep and wool topics.

MR. WILLIAM J. HINES, Montgomery County: Mr. President, Members and Friends of the Maryland Stockmen's Association: Your secretary wrote me a few days ago stating that I was on the program to talk about sheep. Not having time to refuse and being interested, I have prepared this short talk. I would like to refuse not because I am disinterested, but I hate to talk in public. Most speakers start out by saying what a pleasure it is to be here and have this chance to talk with you; but not in my case, for I would much rather be sitting in the audience.

It seems to me that the sheep is one farm animal hard to talk about; but after having them for a while you will always have them. I think the reason for this is because they are not only easy to handle, but are profitable, and the money that you get for a few lambs and wool in the spring comes in at just the right time. I would like to make a few comparisons—sheep against feeder cattle. Will start by saying that the average Maryland farmer who farms around 100 to 150 acres would be better off any year with sheep than with cattle, and I have both. I will make a comparison that I think will go for this year. All Maryland cattle feeders are very much encouraged with present prices. The average advance in total dollars that farmers in my neighborhood have received so far this fall and winter for their cattle has been around $40.00 per head more than the original cost, after 12 months feeding. You can keep five ewes and their lambs on the same feed that it takes to feed and fatten one steer, especially considering that it takes much more grain to feed steers than it requires for sheep and lambs, also the lambs are ready for market before hot weather makes pasture scarce.

In this comparison I have in mind early lambs sold off of grass. A flock of average ewes should raise one and one-quarter lambs each. The lambs from each ewe would have brought around $10.00 this year, with her wool at $2.00 would be a total sale of $12.00 per ewe; five ewes would yield $60.00 against the $40.00 for one steer, a difference of $20.00 in favor of keeping sheep.

I know you will say, "But we have to keep our ewe flock built up." I am going to answer this by saying I have never had a year that I did not have income from my sheep; but cannot say this for cattle. A few years ago I fed 24 cattle for 18 months and sold them through the sale at the Baltimore Livestock Show for $300.00 less than I gave for them. Another thing for sheep: in hot summer months when your cattle are losing weight, because of dried pasturage and flies, sheep will carry on just the same; also any farmer can start in the sheep business, but it takes capital for cattle. In view of these facts I would suggest that the Maryland Stockmen's Association have as their motto for 1935: "More Sheep for Maryland."

CHAIRMAN JONES: That was very good, indeed. Is there any further discussion about the sheep?

MR. K. A. CLARK, Frederick County: I want to say that in my opinion the result of the ram sales was not Mr. Vial's fault. It was not his fault that the rams did not sell for more. I think one reason is that the sales are held a little early; it might be better to have them in August rather than in July. I ran the ram sales for several years, and I did not feel that I had sufficient time to devote to them, and I know that Mr. Vial has even less time than I had. He had so many other things this year to which he just had to devote this time that he had to let some things slip, and the other things seemed more important. I do not believe the ram sales business will ever be a success until the person in charge of it has the time to go into it and do it up right. I never felt I had enough time and he had even less.

CHAIRMAN JONES: Is there anyone else? We will be glad to hear from everyone. If not, we will pass to the next topic, hog topics, "1934 Hog

Health Report," by Dr. Mark Welsh of College Park. I do not see why we should always be giving these men so many titles—Dr. this and that—why not just call them Farmer Welsh and so on.

DR. MARK WELSH, College Park: I am going to give only a short paper, and then I am going to give part of my time to Dr. Hoffman, one of the Federal Veterinarians stationed at Hagerstown. He was out through the West last summer and took some pictures which I think will be of interest to you, and so I will ask him to put on his films after my paper.

1934 HOG HEALTH REPORT

By DR. MARK WELSH
University of Maryland
College Park, Md.

The control and eradication of hog cholera has been virtually accomplished in Canada and in Australia. The methods used in both cases have been in general the same. Live virus, the causative factor of cholera is prohibited from use in treatment procedures in any form. Herds found sick of the disease are immediately destroyed and are buried or burned and neighboring herds are serum treated and quarantined until the danger is past. The owner is paid an indemnity amounting to about two-thirds of the appraised value of the animals destroyed. In the past five years, Canada's average loss has amounted to about $3,000 per year, while in the United States the loss is roughly estimated at $20,000,000 per year. Based on the hog population, their loss is about 60 cents per 1,000, and ours is approximately $350.00 per 1,000. Some day we will discover it's cheaper to eradicate this disease than to pay tribute for not doing it.

For several years Maryland has been using a plan of control and eradication based on sanitary practices that, when employed, reduce the incidence of other infections as well as of hog cholera. Our results this past year are in accordance with out previous findings as to source of infection and method of spread. There were 281 outbreaks recorded for the year, and about 67 per cent. of these were caused by feeding cholera-infected pork scraps in the kitchen wastes, and over 15 per cent. were due to the same material in raw commercial garbage fed to hogs. Approximately 10 per cent. of the outbreaks were caused by the purchase of new stock that were sick or had been exposed, and to roving sick hogs spreading infection in the neighborhood. Cholera-infected meat, then, started 82 per cent. of the outbreaks, and cholera-infected live hogs caused an additional 10 per cent. This leaves only 8 per cent. of the outbreaks to be caused by dogs, birds, streams, trucks, and all the other sources we so frequently hear about. On most farms a man can control the feed of hogs and their movements—and if he can, he can prevent about 92 per cent. of the danger of cholera losses.

This work has been going on for about fourteen years. When it was started, Maryland was subject to frequent and severe losses, and, in fact, cholera alone caused the death of 72 out of every 1,000 hogs raised. Gradually this loss has been reduced to its present low, of about 18 hog cholera deaths per 1,000, and it can, and should go still lower. The control of this disease is essentially a herd management problem. We have long known that hogs in the incubative stage of this disease are difficult if not impossible to detect on post mortem, and a certain percentage get into the channels of trade as dressed or cured meat. A recent report shows that the virus of cholera can survive at least 73 days in the bone marrow of salted and chilled carcasses, and for as long as 42 days in salted skin and muscles. Such tissues are obviously dangerous when fed. Also, hogs shipped to concentration points and later dispersed are often found to have picked up various infections as well as cholera. I again repeat: control of hog cholera is essentially a herd management problem, and most outbreaks of this disease are the result of not observing reasonably good sanitary practices. There are, of course, exceptions, but they are rare.

In the past year there has been a considerable number of herds stunted by intestinal parasites. In many cases improper feeding has caused faulty bone growth, resulting in rickets or similar ailments. We have also had one or two outbreaks of disease in swine herds with fairly heavy losses, the cause of which still baffles both the field and laboratory workers. We do not feel we have all the swine disease problems solved, and especially the advent of swine erysipelas, which has lately been found in Maryland.

This disease has been causing severe losses in several of the Western and Middle Western States, and has now been found as isolated outbreaks in Frederick, Carroll, Montgomery, and Washington counties. Swine erysipelas is caused by small bacteria and seems to be spread by contact of sick and susceptible hogs. Often, however, the source of infection is difficult to determine. It is difficult uniformly to transmit the disease under experimental conditions, and it is quite variable in infected herds. In some outbreaks, only a few animals are affected, and it runs a slow course. In such cases, there are often diamond-shaped red areas on the skin, lameness, and enlarged joints, together with sloughing off of patches of skin, and losing of the ears and tail. This form is not highly fatal, but the animals lose so much weight and fail to use feed economically so that it proves costly to keep them.

In the acute form there is usually a sudden onset with temperatures of 104° to 108°. The animal is indifferent, usually refuses feed, sometimes vomits, and often shows brain disturbances. There is usually a marked weakness in the hind legs similar to that exhibited by a hog with cholera. This form of the disease runs a rapid course and is usually fatal.

This disease, swine erysipelas, is hard to distinguish from hog cholera, and is best diagnosed by the blood tests. Affected animals should be isolated and rigid sanitary measures employed. A serum has recently been developed that seems to give excellent results when administered early in the disease but has little value in chronic cases. Once the infection is established on the premises, it seems to persist for a long time, and thorough cleaning and disinfecting are necessary. Several other animals, among them rabbits, pigeons, rodents, lambs and man may contract this disease. Severe outbreaks of arthritis have occurred in lambs in some of the Western States. In man, it has caused a type of pneumonia, abscesses, and eczema.

It is a swine disease that is rapidly increasing in importance in this country and will undoubtedly prove very costly until controlled. Inasmuch as other types of animals are affected by this same organism, its costs go well beyond the swine herd. It is evident, however, that the sanitary practices advocated for the control of hog cholera will also be beneficial in preventing exposure to swine erysipelas. Competent veterinary service should be secured as soon as suspicious symptoms develop, as in the later stages of the disease little can be done.

(Dr. Hoffman showed moving pictures of the conditions of the animals throughout the drought section of the West, especially with regard to hogs with erysipelas, and the shooting of cattle, etc.)

CHAIRMAN JONES: I am very sorry that I have to leave now. Mr. Harvey always helps me out on these occasions and will take the chair. I hope to be back in time to be with you at the banquet tonight.

Mr. W. R. Harvey of Baltimore County, thereupon took the chair and called upon Mr. J. Herbert Snyder of Carroll County to open the round table discussion of swine topics.

MR. SNYDER, Carroll County: Mr. President, Members of the Maryland Stockmen's Association and Visitors: Your secretary has assigned to me a part on this program designated as the leader of hog topics discussion. As I understand the assignment it is my duty to make the kick-off and the members will then carry the ball. I shall, then, mention only the high spots of the topics and let the members fill in the details.

The first section should be called "supply and demand." Recent reports from the Department of Agriculture show that the fall pig crop for Maryland has been reduced 27 per cent., while that of the United States was reduced 48 per cent. This was not due to poor management, for the average number per litter rose from 6.2 to 6.4. Indications for farrowing show that there will probably be 17 per cent. less litters farrowed in the spring of 1935 than in 1934. The 1934 spring crop was about 20 per cent. under that of the previous year. There are three reasons back of this drastic reduction. Liberal benefit payments by the AAA caused a large reduction. Some corn-belt States contracted as many as 90 per cent. of the producers and this caused nearly a 25 per cent. decrease in that section. The low price of hogs in 1933 and early 1934 making production unprofitable helped the reduction. The drought of the Mid-West, which practically ruined the corn crop, caused much of the breeding stock to be put on the market.

Government control will continue for another year, but with less drastic reduction. While the increase in price will tend to help production, the lack of breeding stock will, of course, limit this. The surplus of pork products has practically disappeared, and it is now only a question of keeping that surplus from being built up again. There should not be an abundance of hogs for at least another year. This has brought about an increase in price. Yesterday the top price on the Baltimore market was $8.65. A year ago it was around $4.00. While this price may not continue, we can reasonably expect a profitable price.

Maryland is ideally situated for a market. Local butchers alone consume a large portion of the Maryland hogs. The large packers find it necessary to get their supplies from the Corn Belt. Prices on the Baltimore market range from 50 cents to $1.00 above those at Chicago. This, with the low cost of transportation from Maryland farms to market makes Maryland an ideal hog State. For several years, the market has paid a premium on the lighter weights. That has now changed and the premium is now on hogs over 200 pounds. Whether this is due to the scarcity of these weights or to the desire of the packers to have less loss in slaughtering I will have to let the packers answer.

In my work with our local committee, Hog Control Association, I have had a chance to observe some of our rank-and-file hog producers. I take it that this section of Carroll County would make a representative cross section of the State. Many raisers have sadly neglected breeding and type. There are too many of the short, fat type. These are not desired by the butchers or by the housewives, and the gain they make on feed is not as fast or as economical. These hogs are not reaching marketable size as soon as they should. This is due to both breeding and management. Some purebred breeders are being criticized for having their hogs too long and shallow. Boars of this type could well be used on some Maryland herds that I have seen.

The purebred hog business has been sadly neglected in Maryland. There are a few good purebred herds, but the low price of hogs has retarded what growth this business had made. It is practically necessary to leave Maryland to get high-class breeding stock. I would not recommend the sale of purebreds for the entire income from the swine herd but it can be made a profitable side. Care should be taken in the selection of the breeding stock, and if the prospective breeder is unable to detect certain weaknesses he should secure assistance from a good hog man. At one of your local shows last fall there was a nice purebred herd on exhibition, but they had one bad fault. There was not a good leg in the herd. Consequently, the judge placed these hogs down and the breeder could not understand why. He could not see those weaknesses. Sometime ago, I was asked to recommend a boar from this same herd for a pig club. I could not conscientiously recommend this herd on account of that fundamental weakness.

In my section the hogs are too closely penned. An active hog will put on a firmer and more evenly distributed fat. They may not look as fat but the weight will be there. Pasture in season is one of our cheapest hog feeds. Good alfalfa hay will help out in the winter. Corn and barley alone will not make proper gains without a protein supplement. Tankage, fish meal, linseed meal, or skim milk will take care of this. A popular protein mixture in the West is equal parts tankage, linseed meal, and alfalfa meal. Few of us supply our hogs with the proper minerals, especially when in dry lot. A change of lots and clean pens help to control the parasites that take a large toll from our hogs each year.

Our 1,500-pound litter contests in the past have proved the need for large litters. An extra pig or two saved at birth may mean the difference between loss or gain with that litter. Some breeds will farrow better litters than others, but most of the difference is due to management, although we must not lose sight of breeding for larger litters. The proper care of the sow both before and after farrowing will help our litters.

In a rambling way I have touched a few of our hog topics. They are not settled, but put before you so that each might think of some phase of the industry that might make it more profitable for him.

CHAIRMAN HARVEY: Is there any discussion?

MR. WM. J. HINES, Montgomery County: I would like to say that it would be helpful if we could get the Legislature to pass a law requiring cites to dispose of garbage without selling it for feed to owners of hogs.

CHAIRMAN HARVEY: We will next have the marketing topic, "How the Commission Men Can Serve the Livestock Industry," by Mr. James E. Silcott, president of the Baltimore Live Stock Exchange, Union Stock Yards, Baltimore.

MR. J. C. CASH, president of the Union Stockyard Company, Baltimore: Mr. Silcott was here but he had to leave and he asked me to read his paper:

HOW COMMISSION MEN CAN SERVE THE LIVESTOCK INDUSTRY

By JAMES E. SILCOTT
President Baltimore Live Stock Exchange

The commission merchant can help promote the interest of the livestock producers by continuing to the best of his knowledge and ability what he has been doing for many years—sell the livestock that is shipped to him for every dollar that it is worth and do everything possible to promote and maintain an open competitive market where supply and demand may be brought together and the basic price established for the sale of all live stock either on or off the market. The price established at the central market governs the price of all stock sold whether it is trucked to the plant of the packer and sold, or sold at home, either to the packer's buyer or to the dealer.

There is no question in my mind that every commission merchant on the Baltimore market does everything in his power to promote and protect the interests of the man for whom he sells stock, if it be a carload or only one head. The central market is a very vital part of this livestock industry, and the producer should recognize this fact and do everything he can to help maintain and promote it. We are, all of us, the producer, the commission man and the packer, necessary to the industry and all interdependent upon one another, and none of us could get along without the central market. There has been a growing tendency of late years for more and more producers to sell their stock direct to the packer and avoid the established market which is set up and maintained for his benefit. Of course, sometimes he may get more for his stock by selling direct than if he had shipped it to the market, but on the other hand, I would venture to say that he has a much better chance of getting the full value on the central market than elsewhere. There is not just one buyer at our market to look at the stock and arbitrarily set a price on it, but practically every packer and slaughterer in the Baltimore area is represented on the market; also buyers come from other Eastern centers of population, and each buyer must buy in competition with the other. I think fair-minded producers will agree that this situation is much healthier and more conducive to obtaining a better price and fairer price than is possible at the packing plant or the farm yard or feed lot with only one buyer and the seller present.

For his own protection and for the furtherance of his own interests the producer should support the terminal market, where everything is done to promote and protect his interests. Every commission firm is bonded to guarantee that the shipper will be paid in full for his stock which he ships and every shipper is paid in full for his stock the same day it is sold. If he accompanies his stock to the market he is given a check for it before he leaves, if he wants it, otherwise it is mailed the same day. Every head of live stock sold at the Baltimore market is weighed on tested scales with self-registering beams and by a disinterested weigher. The stock is sold on the market by trained and competent salesmen, who are in a position to know the market here and just what packers will have to pay in other markets plus freight rates, etc. With this knowledge they can sell the stock on our market for its full value. Stock is sold according to quality, class, and condition, and can be handled in any quantity and class six days in the week.

Mr. President, it is a pleasure to be present at this meeting representing such a cross section of the livestock industry. I have greatly enjoyed it and hope my remarks will promote a better understanding between the producers of our State and the commission merchants on the Baltimore market.

In conclusion, as president of the Baltimore Live Stock Exchange and in behalf of its members, we offer you our sincere cooperation and wish you every success.

Mr. Harvey: I will now announce the names of the Nominating Committee: Messrs. William H. Cunningham of Washington County; Mr. Stanley Stabler and Mr. K. A. Clark.

Mr. Carmichael: Lunch will now be served in the next room. I think we will find an adequate amount of food. If not, call for more, but don't eat too much.

After lunch recess the Nominating Committee submitted the nominations:

President, J. Herbert Snyder, Carroll County; vice-president, Stanley P. Stabler, Montgomery County; secretary-treasurer, B. E. Carmichael, College Park; assistant secretary-treasurer, Joseph M. Vial, College Park; executive committee: Wm. J. Hines, Montgomery County; George K. Bailey, Cecil County; Wm. R. Harvey, Jr., Baltimore County; J. Maguire Mattingly, St. Mary's County; and H. N. Cohen, Talbot County: director Maryland Farm Bureau Federation, Wm. H. Cunningham, Washington County; delegate to annual meeting Maryland Farm Bureau Federation, S. O. Jones, Howard County; director of Agricultural Corporation, Hobart Hutton, Howard County.

The report of the Nominating Committee was accepted and the officers named were declared duly elected.

Thereupon Mr. J. Herbert Snyder, of Carroll County, was called to the chair and, after expressing his thanks to the Association for the honor of being elected as president for the ensuing year, proceeded with the program.

Mr. Snyder: We will next hear from Mr. W. R. Harvey.

BALTIMORE'S SIXTH ANNUAL LIVESTOCK SHOW

By Wm. R. Harvey, Jr.
Manager, Baltimore Livestock Show

Baltimore's sixth annual livestock show was held at the Union Stock Yards October 9, 10, 11, 12, 1934, with weather conditions ideal every day.

The show opened on Tuesday at 9 o'clock with the judging of all carlot entries of cattle, all lambs and hogs.

At the same time the student's judging contest, under the supervision of Dr. DeVoe Meade of the University of Maryland took place with four teams of five students each, and their work was rated by the judges in the order named: Penn State Team, State College, Pa., first; Virginia Poly Team, Blackburg, Va.; second; University of Maryland Team, College Park, Md., third; Connecticut State College Team, Stoors, Conn., fourth. Penn State also had the high man, Mr. S. E. Smith, in all classes. The students worked on classes of hogs, lambs, steers, and draft horses. The horses for the contest were secured by Mr. Joseph M. Vial and were furnished by Dr. R. S. Snavely of Hagerstown; Monocacy Farms, Frederick; and Bel Air Farms, Bowie. The display of the different classes of horses proved to be quite an attraction, and there were many interested farmers at the ringside throughout the contest.

The annual banquet with O. K. Quivey acting as toastmaster, held in connection with the show was held on Wednesday night at the Southern Hotel, there being 350 in attendance where good fellowship prevailed and all enjoyed the evening.

On Wednesday the judging of individual steers, trios of steers and Boys' 4-H Club steers took place with the classes in all breeds well filled and with quality better than at any of the former shows, it being pretty generally agreed that the grand champion steer of this Show was the best steer ever exhibited at any of the Baltimore livestock shows.

The judges in all classes did the work in their usual commendable manner, making the following awards in the different classes:

Department A

Fat Cattle, Open to Exhibits from Ohio, Pennsylvania and Tennessee.

Class 1

Carload of 15 head of steers or heifers weighing over 1,100 pounds.

1. Wylie Sutherland, Mountain City, Tenn.

Class 2

Carload of 15 head of steers or heifers weighing under 1,100 pounds.

1. Milky Way Farms, Pulaski, Tenn.
2. Archie T. Adair, Centre, Pa.
3. George H. Kirkpatrick, Utica, Ohio.
4. George H. Kirkpatrick, Utica, Ohio.

Champion carload of fat cattle, department A, Milky Way Farms, Pulaski, Tenn.

Department B

Fat Cattle, Open to Exhibits from Maryland, Virginia, West Virginia, Delaware and North Carolina.

Class 1

Carload of 15 head of steers or heifers weighing over 1,100 pounds.

1. George B. Holtzman, Mt. Jackson, Va.
2. Clinton L. Riggs, Catonsville, Md.
3. C. H. Rabbitt, Gaithersburg, Md.
4. C. N. Sullivan, Warrenton, Va.

Class 2

Carload of 15 head of steers or heifers weighing under 1,100 pounds.

1. L. Lake, Warrenton, Va.
2. L. Lake, Warrenton, Va.
3. M. C. Sherman, Queenstown, Md.
4. George B. Holtzman, Mt. Jackson, Va.

Champion carload of fat cattle, department B, L. Lake, Warrenton, Va.
Grand champion carload of fat cattle, Milky Way Farms, Pulaski, Tenn.
Reserve champion carload of fat cattle, L. Lake, Warrenton, Va.

Department C

Three Steers or Heifers Open to Exhibits from Ohio, Pennsylvania, Tennessee, West Virginia, Delaware, North Carolina, Maryland and Virginia.

Class 1

Three steers or heifers, fed and owned by exhibitor.

1. Fox Hill Farm, Fallston, Md.
2. Creswell Farms, Forest, Va.
3. P. E. Bird, Marion, Va.
4. Canterbury Farms, Warrenton, Va.
5. Grove Bros., Waynesboro, Va.
6. Cremona Farm, Mechanicsville, Md.
7. Buck & Doe Run Valley Farms, Coatesville, Pa., R. No. 5.
8. Highland View Farm, Woodbine, Md.

Grand champion trio of steers or heifers, Fox Hill Farm, Fallston, Md.

Department D

Individual Steers or Heifers, Open to Exhibits from Ohio, Pennsylvania, Tennessee, West Virginia, Delaware, North Carolina, Maryland and Virginia.

Class 1

Individual steers or heifers, fed and owned by exhibitor, exhibited at halter. Club steers not eligible.

1. Creswell Farms, Forest, Va.
2. Fox Hill Farm, Fallston, Md.
3. Fox Hill Farm, Fallston, Md.
4. Highland View Farm, Fallston, Md.
5. Buck & Doe Run Valley Farms, Coatesville, Pa., R. No. 5.
6. Canterbury Farms, Warrenton, Va.
7. Foster Brothers, Owings Mills, Md.
8. Creswell Farms, Forest, Va.
9. Buck & Doe Run Valley Farms, Coatesville, Pa.
10. Fox Hill Farm, Fallston, Md.

Grand champion individual steer or heifer, competed for by winners in departments D and E, Creswell Farms, Forest, Va.

Reserve champion individual steer or heifer, Fox Hill Farms, Fallston, Maryland.

Department E

4-H Club Steers or Heifers Open to Exhibits from Ohio, Pennsylvania, Maryland, Virginia, Delaware, Tennessee and North Carolina.

Herefords.

Class 1

1. Hogueland Taylor, Petersburg, W. Va.
2. Bud Goodman, Marion, Va.
3. Hogueland Taylor, Petersburg, W. Va.
4. Virginia Madron, Tazewell, Va.
5. James Harman, Petersburg, W. Va.
6. Hogueland Taylor, Petersburg, W. Va.
7. Matlie Fry, Waynesboro, Va.
8. Matlie Fry, Waynesboro, Va.
9. John M. Thompson, Tazewell, Va.
10. Copenhaver Bros., Pounding Mill, Va.

Class 2

Shorthorns.

1. Grove Bros., Waynesboro, Va.
2. Grove Bros., Waynesboro, Va.
3. Edgar Greever, Burkes Garden, Va.
4. Grover Persinger, Lewisburg, W. Va.
5. Charles Meek, Marion, Va.
6. Janice Madron, Tazewell, Va.
7. William Davidson, Bowie, Md.
8. Virginia Madron, Tazewell, Va.
9. James Davidson, Jr., Bowie, Md.
10. Grove Bros., Waynesboro, Va.

Class 3

Angus.

1. Bud Goodman, Marion, Va.
2. Thomas Anderson, Marion, Va.
3. Thomas Anderson, Marion, Va.
4. Rucker Bros., Delaplane, Va.
5. Rucker Bros., Delaplane, Va.
6. Maurice O'Bannon, Woodville, Va.
7. Kermit Cline, Fishersville, Va.
8. Maurice O'Bannon, Woodville, Va.
9. Rucker Bros., Delaplane, Va.
10. Shiflet Bros., Waynesboro, Va.

Grand champion Boys' 4-H Club steer or heifer, Bud Goodman, Marion, Virginia.

Department F

Feeder Cattle, Open to All.

Class 1

Carload of 20 head of Hereford, Shorthorn or Angus steers or heifers weighing under 550 pounds.

1. Milky Way Farms, Pulaski, Tenn.
2. R. J. Raynor, Gillette, Wyoming.
3. Milky Way Farms, Pulaski, Tenn.
4. Milky Way Farms, Pulaski, Tenn.

Class 2

Carload of 20 head of Hereford, Shorthorn or Angus steers or heifers weighing 550 pounds and not over 1,000 pounds.

1. Howard M. Gore, Clarksburg, W. Va.
2. J. F. Walker, Marshall, Va.
3. R. J. Raynor, Gillette, Wyoming.
4. R. J. Raynor, Gillette, Wyoming.

Grand champion carload of feeders, Milky Way Farms, Pulaski, Tenn.

Department G

Fat Hogs Open to All.

Class 1

Carload of not less than 50 head of fat hogs weighing 150 to 225 pounds.
No entries.

Class 2

Pen of five fat hogs weighing 150 to 225 pounds.

1. Jesse Hurd, Jr., Chestertown, Md.

Class 3

Individual barrow weighing 150 to 225 pounds.

1. Jesse Hurd, Jr., Chestertown, Md.
2. Jesse Hurd, Jr., Chestertown, Md.
3. Richard R. Bennett III and G. T. Bennett, Woodbine, Md.

Grand champion pen or five fat hogs, Jesse Hurd, Jr., Chestertown, Md.
Grand champion barrow, Jesse Hurd, Jr., Chestertown, Md.

Department H

Fat Lambs, Open to All.

Class 1

Carload of not less than 50 fat lambs.

1. G. C. Dixon, Bayard, W. Va.

Class 2

Pen of three fat lambs.

1. Jesse Hurd, Jr., Chestertown, Md.
2. Cremona Farm, Mechanicsville, Md.
3. Hogueland Taylor, Petersburg, W. Va.

Class 3

Individual fat lamb.

1. Jesse Hurd, Jr., Chestertown, Md.
2. Jesse Hurd, Jr., Chestertown, Md.
3. Cremona Farm, Mechanicsville, Md.

Grand champion carload of not less than 50 fat lambs, G. C. Dixon, Bayard, W. Va.

Grand champion pen of three fat lambs, Jesse Hurd, Jr., Chestertown, Maryland.

Grand champion individual fat lamb, Jesse Hurd, Jr., Chestertown, Md.

The sale of all of the fat cattle that passed the inspection of the weeding committee took place on Thursday, beginning at nine o'clock, with the following results:

Carload Entries of Fat Cattle

There were 30 loads of fat cattle passing through the sale ring. The grand champion load, a load of yearling Herefords exhibited by Milky Way Farms, Pulaski, Tenn., were purchased by the William Schluderberg-T. J. Kurdle Company at $12.50, with the reserve champion load, also Herefords, exhibited by L. Lake, Warrenton, Va., going to the same buyer at $12 per cwt.

The five highest selling loads averaged $10.65 per cwt.
The ten highest selling loads averaged $9.78 per cwt.
The fifteen highest selling loads averaged $9.28 per cwt.
The twenty highest selling loads averaged $8.69 per cwt.
The thirty loads, entire consignment, averaged $8.41 per cwt.
Bringing a total amount of $56,334.37.

Trios

There were ten trios sold, the grand champions, three Angus, exhibited by Fox Hill Farms, Fallston, Md., going to Schluderberg-Kurdle Company at $10.10. The entire offering of six trios averaged $9.22 per cwt., bringing a total amount of $2,851.67.

Individual Steers

There were 52 individual steers, the grand champion, an Angus exhibited by Creswell Farms, Forest, Va., going to Heinz Riverside Abattoir at $30.00. The reserve champion, also an Angus exhibited by Fox Hill Farm, Fallston, Md., went to the William Schluderberg-T. J. Kurdle Company at $20.00.

The five highest selling individual steers averaged $15.55 per cwt.
The ten highest selling individual steers averaged $12.57 per cwt.
The twenty highest selling individual steers averaged $10.90 per cwt.
The entire offering of 52 head averaged $10.62 per cwt.
Bringing a total amount of $3,610.27.

Boys' 4-H Club Steers

There were 78 head of club steers, the grand champion, an Angus exhibited by Bud Goodman, Marion, Va., going to Heinz's Riverside Abattoir at $25.00.

The five highest selling 4-H Club steers averaged $12.90 per cwt.
The ten highest selling 4-H Club steers averaged $10.95 per cwt.
The fifteen highest selling 4-H Club steers averaged $10.50 per cwt.
The twenty-five highest selling 4-H Club steers averaged $10.17 per cwt.
The entire offering of 78 head averaged $10.05.
Bringing a total amount of $6,814.43.

Feeder Cattle, Hogs and Lambs Sold on Friday

There were 395 head of feeder cattle enterd in the show, and all passed through the sale ring.

In Class 1, calves weighing under 550 pounds, there were seven loads, all of which hold for an average of $5.61 per cwt.

In Class 2, steers or heifers weighing 550 pounds and not over 1,000 pounds, there were 13 loads that sold for an average of $4.45 per cwt.

The grand championship was awarded to the load of calves exhibited by Milky Way Farms, Pulaski, Tenn., that were purchased by Ex-Governor Westmoreland Davis of Leesburg, Va.

The 395 feeders sold for $18,425.62.

Hogs

There were but nine head of hogs entered, grand champion barrow and pen of barrows, exhibited by Jesse Hurd, Jr., of Chestertown, Md., were sold to the William Schluderberg-T. J. Kurdle Company at $11.25 and $10.00 per cwt., respectively.

Lambs

There were 67 head of lambs entered in the show. The grand champion carload was sold to George Ruppersberger, Jr., at $9.40 per cwt. They were exhibited by George C. Dixon, Bayard, W. Va. The grand champion trio of lambs and the grand champion individual lamb were exhibited by Jesse Hurd, Jr., of Chestertown, Md., and were purchased by the William Schluderberg-T. J. Kurdle Company at $25.00 and $17.00, respectively.

The entire consignment of all stock entered sold for $88,036.24.

MR. SNYDER: Thank you Mr. Harvey. The next speaker will be Mr. Benjamin Watkins, 3rd, of Davidsonville.

SMALL AND OTHER LIVESTOCK SHOWS

By BENJAMIN WATKINS, 3RD
Davidsonville, Md.

I come from Anne Arundel, a county that is more often thought of as a vegetable garden than a livestock center, but while we cannot measure up to some of the other counties of Maryland in livestock production, we do have some blue ribbon animals in all lines of livestock, I believe, and to prove this I am going to tell you of a pleasant encounter some of our dairymen had two years ago. Dairying is not one of the branches of this organization, but this story is in keeping with my subject, "Small and Other Livestock Shows." There used to be a class entered at Timonium Fair known as the County Herd in various breeds of dairy cattle, and Baltimore County had gotten in the habit of capturing the Holstein herd class. In 1932 Anne Arundel entered a herd and just before the judging one of Baltimore County's large dairymen and exhibitors stated that "if those cantaloupe growers from Anne Arundel can lick us, it is time to stop, and my herd is for sale." Well, we licked them, and while I do not think that gentlemen has sold his herd, I do know that that class was never offered again. I'm sorry the man who said that is not here, I'd like to remind him again of what he said.

Now as to the small livestock shows, Mr. W. R. Harvey has just talked on the Baltimore Livestock Show, which is certainly a well-conducted and worthwhile enterprise, and I say, fellow stockmen, that the small neighborhood shows are just as necessary to produce stock for the big shows as it is necessary for a mare to produce a foal in order that a horse may be raised.

You asked, what is there to be gained from the shows? There are at least three major points to be gained by the exhibitor and many more for the spectator. The exhibitor gains: (1) the best form of advertisement, that of showing his stock to the public under most favorable circumstances. Maybe you think you have nothing to sell, but some good stockmen have said that every head of stock they own is for sale if the price is satisfactory; (2) he enjoys the thrills of friendly competition, and everyone has sporting blood enough in his veins to enjoy winning, and we should not let defeat down us; and (3) he has the opportunity of measuring the worth of his management, handling, and feeding against that of other good stockmen. A good farmer down our way once said, "Man, when I go to a farm and see things done properly I am all eyes and ears, but man, when I see things done any sort of way I am both blind and deaf."

We have, with headquarters at Annapolis, our Southern Maryland Horse Breeders Association made up of men and women who are interested in the breeding, handling, and training of good horses. Some of our members prefer the "light leg" horse for hunting, etc., and others are solely interested in the draft horse. Ever since its organization about five years ago, we have had our light horse show in the spring, with usually a race or two added. And two years ago we had our first breeders' show with classes for hunters, and draft foals, colts, stallions, and brood mares. The result of this show was most satisfactory. Interest was keen and the exhibits good. I am sorry to say that for the past two seasons we have had to give up this show on account of the horse disease which has been raging both years in the fall when we planned to have the show, but we expect to repeat, and we expect these shows to improve greatly our horse population.

CHAIRMAN SNYDER: This concludes this session. Let us all remember the dinner meeting tonight at the Wm. Schluderberg-T. J. Kurdle plant on East Baltimore Street, and be there on time. A good program has been arranged and there is every assurance that a good time will be had there.

MARYLAND STOCKMEN'S ASSOCIATION BANQUET, JANUARY 9, '35

held at
Wm. Schluderberg-T. J. Kurdle Company
3800 East Baltimore Street
Baltimore, Md.

Mr. J. W. Jones, presiding as toastmaster.

TOASTMASTER JONES: It has been suggested that you might move forward. This is a livestock meeting and we are afraid you will not hear what is being said. Pull your chairs up. Now, I wish you would all be seated. Where is Mr. Joe M. Vial? All present take their seats and look at that card at your table, asking you to join the Association. If you care to do so, pass it to the head of the table, that will make it possible for you to join the Association with the least effort, and Mr. Vial will take care of them.

Now, friends, this Livestock Association has had a number of meetings. I have tried to attend everyone possible for me to attend. I have always enjoyed them and gotten a great deal of pleasure out of them during the last two years. I thought last year was a very successful meeting, very delightful, but I also want to say that this year surpasses last year by a considerable amount, so far as I am able to judge. As long as I was there this morning it was a splendid program, and Mr. Harvey tells me the interest continued until the end of the session. I am sure the attendance this morning was the largest attendance we have ever had, and this evening is the largest attendance at a banquet that we have ever had since I have been attending the meetings.

Mr. William Schluderberg is with us tonight and I think we owe him a vote of thanks. I think that he and others of his organization have certainly taken care of us in a marvelous way, and I am sure everybody in this room appreciates that. I suggest we give them a rising vote of thanks.

(A rising vote was given amid applause.)

TOASTMASTER JONES: I thought it was the proper thing for me to return to Montgomery County this morning, but I want to tell you friends gathered here that unless the weather changes you had better come down to the hotel and secure a room. I left there at a quarter past five, hoping to get in here as quickly as possible, but I was not able to drive over 15 to 20 miles an hour, some of that may be laid to my age and gray hairs, but most of it was due to the very bad fog, and I had to drive very carefully.

These livestock meetings, as I said this morning are very valuable to our people here in the State. I think there are a great many cases in which we might give a little more time to the livestock organization. If we would all get back of the organization and show our interest throughout the year as we do here at the annual meeting.

The membership this year is larger than ever. The total in 1933 was 44 and in 1934 we had a total of 119. With these cards around on the tables, I hope that everybody is going to take this opportunity and spend $1.00 in the interest of the livestock of Maryland by signing up that card and becoming a member of this organization. It is extraordinarily good to have a large membership, an interested membership, a membership that is going to attend meetings. I think this organization ought to hold at least one semi-annual meeting, and a number of executive meetings. Maybe we will come to that. There is no doubt in my mind from the interest here tonight, there is no reason why you should not control the livestock interests of Maryland rather than leave them to somebody else. I never feel at all doubtful of anything when I can look into the countenance of men and women at such gatherings as we hold here in Maryland. I hear other States brag what they can get up, but I can tell you, I am a Maryland man, a Montgomery County man, I know you all think I talk too much about Montgomery County, as if there were no other county but Montgomery County. I know there are, but Montgomery County is all right. As for the State of Maryland, it is the greatest State in the Union. There is none better. I am convinced of that more every year and every day.

Now, I am not supposed to do very much talking here tonight, we want to give these gentlemen who are prepared to talk on these subjects all the time we can. As I look over this gathering, I see many faces I have not seen for some time—there is old man Stewart. How are you? I saw your wife today, but not you. One man got up from a sick-bed in Montgomery County to come here today. I do not see a single man here who does not look all right to me and, as for the ladies, there is no need to say anything about them.

Now, gentlemen, the first thing we have on the program this evening is "Livestock and a Balanced Agriculture," by Dr. H. J. Patterson. I am sorry that Dr. Patterson is unable to be with us on account of illness. I am sure we all love Dr. Patterson. I do not think there is anybody interested in agriculture in the State of Maryland who does not know Dr. Patterson. I have known him a long time, and I appreciate him very much—everybody does. I hope some of these gentlemen from the University will convey our regret at his not being present, and tell him how sorry we are that he is unable to be here.

The next subject we have is "What Some Foreign Governments Are Doing to Aid Livestock Improvement," by Dr. C. D. Lowe, of the United States Department of Agriculture.

DR. LOWE: Mr. Toastmaster, Members of the Livestock Association, Ladies and Gentlemen: An after dinner speaker has been described as a fellow who eats a lot of food that he does not need and then proceeds to talk about a subject he does not understand to a crowd that does not want to hear it. I give you that definition now in order that there may not be any misunderstanding between us later on; and furthermore, I want to point out that that definition does not apply to anyone on this program outside of myself.

I believe I noticed on your program, almost if not quite opposite my name, the word "Reading." I am not sure whether that is put there for me or for the other gentleman, but if you will pardon me I am going to assume that it applies to me.

WHAT SOME FOREIGN GOVERNMENTS ARE DOING TO AID LIVESTOCK IMPROVEMENT

By C. D. LOWE
Senior Extension Animal Husbandman, U. S. D. A.

When your secretary invited me to review some of the measures in use in other countries for governmental encouragement of better livestock, I felt some hesitancy in accepting. Being a Government employe myself, naturally I wondered how far I should go along this line without including something concerning our own attempts in this field. After consulting with Professor Carmichael, however, it was decided to more or less combine the two ideas.

Livestock improvement is generally recognized as being a fundamental undertaking throughout the commercial livestock producing sections of the world, and, while practically all governments are, and for various periods have been, active in stimulating improvement programs, no one of them has developed a plan of universal acceptance which all nations have agreed is best. Hence, it appears the best course is to assume that no nation has a monopoly on ideas in this field and that all are promoting various schemes toward the desired common end, and that as long as this situation exists we may as well familiarize ourselves with the different efforts under way in other countries, consider their adaptability to our own conditions and, if they are usable, devise ways and means of putting them into operation in our own country. It is with this thought in mind that I briefly review some of the more outstanding foreign governmental livestock improvement programs.

A study of livestock aids by other governments soon convinces us that we are not ourselves necessarily remiss for not having adopted all the devices in use in other lands. A plan well suited to a small country with a homogeneous people and but one or two predominant breeds in each species might not work at all in a widely flung nation like our own.

Classes of aids may be grouped broadly into the following: regulatory, direct financial grants or subsidies, and purely educational or voluntary programs.

Under regulatory would come all efforts in the field of livestock health. Herein it might be stated that our own nation is recognized throughout the world as the leader. Under regulatory also would be included the supervision and actual recording of pedigrees and transfers of ownership certificates on purebred animals. Our neighbor on the north, under its Canadian National Live Stock Records, is the outstanding example of governmental participation in this line of activity. They have complete charge of all phases of pedigree livestock records, although the different breeds maintain their own associations and handle promotion publicity activities. France, Denmark, Spain and some other European countries maintain a very close supervision of livestock pedigree work, but not to the same extent as does Canada. In Argentina livestock pedigree work is conducted by the so-called Rural Society of that nation, a semi-public agency.

Denmark, of course, furnishes a leading example of a highly developed livestock industry enjoying close government cooperation and help. As far back as 1852 the Danish Government passed a law under which a modest sum of money was given annually as prizes for the best breeding animals at shows, and today such grants cover a wide range of similar activities, frequently allied with an extensive and highly successful system of cooperative breeding and marketing associations.

Reports from various departments in France, which are now some years old, show cooperative breeding associations organized according to government regulations; a provision for the borrowing of government funds at 2 per cent. interest for the purchase of selected sires; a law (passed in 1922) requiring that stallions must be purebred and possess a clean bill of health before being offered for service; and government awards for prize winners at breed shows and fairs.

The Irish Free State passed a breeding act in 1925 which empowers the government to license all bulls used for breeding, with a penalty of $100 provided for anyone owning an unlicensed bull. Inspections of bulls are made twice a year, and the first three inspections under the act caused 8,000 inferior bulls to be condemned out of a total cattle population of four million.

In England, and elsewhere in the United Kingdom, a comprehensive scheme for livestock improvement was inaugurated by the British Government in 1914, by which farmers' associations receive government aid in the purchase of sires which are approved by government livestock officers. More recently the British have tried a swine improvement plan known as the East Anglican Pig Recording Scheme, which has for its chief aims the detection and elimination of the poorer producing strains and improvement in the general level of feeding and management. The plan was worked out by the Cambridge Department of Agriculture and is sponsored by the Government.

In Argentina most of the livestock is owned in large herds and flocks, whose owners do their own financing of importations and other livestock improvement measures.

In Australia much attention is given to livestock improvement, particularly with sheep, and government aids in the way of loans of purebred sires from State experimental farms, or direct government aid in the purchase of outstanding sires, is quite common.

Coming nearer home, to Canada, we find numerous aids, both by the Dominion Government and by the provinces, in the cause of livestock improvement, and they are interesting because of the similarity of their industry with ours in some respects. In horse breeding the Federal Livestock Branch of the Canadian Government first offered to pay one-third of the service fee charged for stallions which could qualify under a Federal inspection service. A substitute plan, which has already been put in operation in the Province of Quebec, provides a bonus payment direct to the stallion owner of $350.00 a year for horses of the highest rating, providing a certain number of mares are settled in foal, and ranging down to $200.00 a year for horses receiving lower ratings.

The Canadian Government loans bulls to cattle improvement associations where at least three such associations with not less than three members each are organized in a district. The bulls are alternated among the three associations, with proper care of the bulls the sole obligation of the stockmen.

For swine, a bonus of $15.00 is allowed on the purchase of boars provided the boar is bred to 20 sows from 10 different owners during the year. For advanced registry boars the bonus is $20.00 with the provision that it will be paid only to individual purchasers, not to clubs.

For sheep, a bonus of from $2.00 to $5.00 is allowed on the purchase price of a ram, depending upon quality, provided the Province will match the amount.

In addition to the above, rams are provided to sheep clubs of 10 or more members at a low fixed price, the maximum being $15.00, the balance being paid by the government; and boars are loaned to boys' swine clubs in sufficient numbers to breed all sows.

The Province of Ontario pays 20 per cent. of the purchase price of purebred bulls to owners who have never before owned a purebred bull; and, for stallions of high quality, gives a bonus of $100.00 to the owner in addition to a $100.00 bonus from the federal government, all in addition to the service fee subsidy of one-third noted above.

The Province of Quebec will loan up to 60 per cent. in the case of syndicates and 75 per cent. to agricultural societies for the purchase of high quality stallions, the loan to extend over a four-year period. As much as two-thirds of the purchase price, with a $150.00 maximum, is loaned for the purchase of record-of-performance dairy sires. Purchasers of purebred dairy heifers are offered bonuses of from $10.00 to $30.00 to which is added $5.00 if the heifer qualifies for record-of-performance during the first lactation. A bonus of $3.00 per head, plus freight, on lots of 25 or more head, is offered to purchasers of grade dairy heifers. Loans up to one-half the purchase price, with a maximum of $50.00 are made to buyers of purebred boars, and no interest is charged on the loans.

Other provinces offer similar, but in most instances less extensive bonuses and subsidies, either independent of or in cooperation with the Dominion Government.

In the U. S. S. R. (Soviet Rusia) as would be expected, we find an even greater experimental effort on the part of the government to bring about widespread and rapid improvement in livestock quality. Purchases of superior breeding stock from other countries including our own with funds of more or less public origin are the basis of improvement efforts. It is through the use of artificial insemination in which the Russian scientists have made much progress that they are expecting their major gains. An idea of how rapidly they are able to disseminate the breeding powers of sires is indicated by the fact that they report 1,056 calves sired by one bull in a period of two months and 2,734 ewes impregnated by the sperm of a single ram during a 35-day period. They are even looking forward to the time when they can inseminate females from a sire long dead, and already report having kept the sperm fluid alive for a period of 20 days after collection. It is apparent that the practical adoption of such a system of breeding is justified only by the desire more fully to utilize sires of outstanding merit or to increase the number of females possible of fertilization from a single sire where actual shortage of sires exists.

The foregoing gives some idea of the various types of aids being attempted in other parts of the world, but I do not feel that I should dismiss the subject without at least touching on some of the efforts of our own Government to be of service in this field. Aside from livestock sanitary regulations, our Government has depended mainly on educational effort—that is the dissemination of information derived from research and common knowledge aimed to influence livestock owners to voluntarily enlist their cooperation in livestock improvement programs. The "Better Sires—Better Stock" campaign of the Bureau of Animal Industry is an example of a simple yet effective means of stirring livestock owners to improve the quality of the animals they own by pledging themselves to use only purebred sires of good quality. The financial support given by the Federal Government to the States for the support of research and extension work under which significant success has been achieved in the production of more efficient and higher qualitied animals is another contribution of Uncle Sam in this field. The Remount Service of the United States Army under which approved stallions are available for the production of certain types of horses is another example of United States aid. Some seven hundred stallions are now in service under this plan.

Importations from distant lands of breeding stock offering promise of meeting certain requirements to withstand climatic or other conditions or of outstanding individual merit have been made. For example sheep from Great Britain and Australia, hogs from Denmark and cattle from South Africa, England, and other countries have been imported and used in efforts to find something better fitted for special purposes than we now have.

The latest development from Washington in the field of animal breeding is a project which has been stimulated by Secretary Wallace's interest in this particular field. It is based on the well-known ability of homozygous animals to breed true. When such animals are homozygous for characters which are desirable it is apparent that their use will gradually bring about an improvement in the offspring.

The project thus far is confined to the location and identification of such animals by comprehensive surveys. When this is completed it is expected that a practical plan of making the services of such animals available to the industry at large will be announced. This promises to be program in which all agencies having to do with the production of livestock and their products may find an opportunity to enlist their aid in a cooperative way and in which progressive livestock breeders may participate to the degree represented by their interest.

TOASTMASTER JONES: Thank you, Mr. Lowe, I am sure that our people are much interested in your timely presentation of an important topic.

We have also received regrets from Mr. Finney, of Annapolis, who is the next speaker on the program. He is very sorry not to be here. I might say at this time that Mr. Edwin Warfield, Jr., who was to talk tonight on "What of the Future for Maryland Livestock Production," is reported to be ill and not able to attend the meeting.

The next subject is "A 1934 Importation of Angus Cattle to Maryland from Scotland," by Mr. George Bailey, of Earleville.

A 1934 IMPORTATION OF ANGUS CATTLE TO MARYLAND FROM SCOTLAND

By GEORGE BAILEY
Earleville, Md.

MR. BAILEY: Mr. Toastmaster, Stockwomen and Stockmen: Your secretary, Mr. Carmichael, has asked me to speak briefly this evening about the circumstances and experiences leading up to the Wickwire Farms importation this fall of Aberdeen-Angus cattle from Scotland into Maryland.

Maryland itself caused this importation.

Any Marylander can tell you that Maryland is the gem upon the breast of the nation. Her waters gleam with a finer fire than any diamond, and are certainly more productive; while they lie in a simple beautiful setting of fields, meadows, and woods infinitely more lovely and valuable than platinum.

Viewed through the eyes of the cattleman, Maryland still remains a gem.

Here your pasture season lasts through six months of the year, and sometimes seven and eight, due to mild weather and the pasturage of fields of winter grain. The winter itself, as we exceptionally received such distinct proof of last year, is not only short but mild, 9° above zero being considered very low, and 18° below zero, such as we had at the head of the Bay last winter, being disregarded as impossible. The summers are hot, but certainly no hotter than those of many of the more northerly sections of the country. Our usual short drought period in the middle of the summer can easily be guarded against by planting a small field of Sudan Grass, or by the use of lespedezas or soy beans. Flies we raise in large quantities—but we can also raise grains in great plenty. Many Maryland farms are able to make a practice of raising from 40 to 55 bushels of corn to the acre, 50 bushels of barley, 50 to 70 bushels of oats, 25 to 35 bushels of wheat.

One feature of Maryland is that it is central to the large population centers of the East. New York, Philadelphia, Wilmington, Baltimore, Washington, and other cities want prime beef and will have it. They form the great quality markets, New York of course being the largest, and also the most exacting.

These markets definitely want to encourage the local production of first-class beef. The Batlimore Livestock Show and Sale is one indication of that. I can give two more simple but informative ones from two Wickwire Farm sales. One of them was made in 1932: we took a small load to Philadelphia, and got the top of the United States markets for quite a period. In 1934 we took another load to New York, and again received the top of all the United States markets for some days. Now the interesting point of these tops is not that the Eastern Shore of Maryland made two United States tops out of two loads of Aberdeen-Angus cattle sold to the North—the interesting point is that the cattle themselves were not graded prime, but choice. Both lots dressed about 61 per cent. Better cattle were probably sold for less money on the same days somewhere in the United States. But the Eastern packers want to encourage Eastern production of beef of the correct type and quality.

This was of course small-scale business. However, I think it proves the point more conclusively than sales of several carloads would have; for ordinarily large packers would not pay much attention to small loads, much less give them exceptionally high prices, which they perhaps did not quite deserve.

In a few year's time, I expect to see the Maryland Aberdeen-Angus Association selling Maryland Aberdeen-Angus beef under a trade name. It can be done if the members of the association will cooperate in keeping the quality of their product marketed under this name at a uniformly high level.

There will soon be enough cattle in the State for the Association to attempt this business on a comparatively large scale. When Wickwire Farms put in Angus cattle about five years ago, their purebred herd was about the third oldest in the State. That was before Mr. M. C. Sherman of Bennett's Point, the dean of Maryland Angus breeders, had started the Association.

Now there are over thirty herds of purebred Angus in the State. Nor are they simply purebred cattle. Due largely to the influence of that Earl Marshall of Angus men, Mr. W. Alan McGregor, they are in almost every instance herds of the highest quality. Maryland probably has more first-class Aberdeen-Angus bulls in proportion to the number of herds than any State in the Union—nor are the females far behind, if at all. These herds are in good and careful hands, and are steadily improving and enlarging.

Now perhaps you can see why Maryland forced Wickwire Farms into making this importation. Wickwire found itself to have a very good herd of Angus cattle in a section beautifully suited to the production and marketing of quality beef. But on all sides new and excellent herds of Aberdeen-Angus cattle were springing up. In order to keep in a position somewhere near the front of this line, a herd had to improve constantly. But where to get the material with which to do this? Many of the top cattle from the North, Middle-West, West, and South were already at work in Maryland, in the Wickwire herd as well as in the others. And yet the Wickwire single steer at the 1934 Baltimore show never got any higher than fifth, and ended up in a grand slide down the line to twelfth place, I think it was.

The only direction left uncombed for quality cattle to bring to Maryland was the East. To the East lay the Atlantic Ocean. But beyond lay Scotland, and the great ancient herds of the breed, Ballindalloch, Doonholm, Harviestoun, and others. These herds have bred cattle for generations that have not only made history themselves but that have been able to reproduce history-making cattle year after year.

We thought that we might find material there that would enable us to keep well in the running here in Maryland. I think we undoubtedly did. But we have yet to prove to our fellow-breeders that so long a journey was necessary.

It is a great pleasure to be associated with such a vigorous and growing business in this State. But it has its troubles and its dangers too.

Carthago delendum est.

Legislation centered about the agglutination test for Bang's disease must be stopped.

Now if the question is asked, "Why must legislation centered about the agglutination test for Bang's disease be stopped?" I can reply this: The agglutination test for Bang's disease is inconclusive, inaccurate, uncertain, and confusing. If its use is forced throughout the country, and reacting animals are slaughtered under what might be called the Williams Plan A, it will eradicate not Bang's disease, but a large proportion of the best producing milk and beef animals in the United States. I am relying for proof of my statements not only on my own limited experiences and knowledge, though both confirm them, but upon the knowledge and experiences of most of the foremost veterinnary research and field men, and of the foremost breeders of cattle, not only in the United States, but throughout the world.

TOASTMASTER JONES: I am sure that from that talk we could get a nice round-table discussion if we had the time. We are very much obliged to Mr. Bailey.

The next subject is "The Public Stockyards and the Livestock Producer," by Mr. J. C. Cash, president of the Union Stockyard Company, Baltimore.

THE PUBLIC STOCKYARDS AND THE LIVESTOCK PRODUCER

By J. C. CASH
President Union Stockyard Company
Baltimore, Md.

It is a pleasure to be present at a meeting of this kind where so many branches of the livestock industry are represented. Most of us who were born and raised in the Middle-West look upon the Atlantic Seaboard States as the center of industry rather than livestock. We had heard of the Shenandoah Valley and it's famous grass cattle, a little of the Virginia and West Virginia lambs, but nothing about Maryland. Yet since October 1, when I became a resident of this State, I have found that what is true of the Virginias is true of Maryland and even more so. The livestock population of our State is nearly a million head and has a diversification greater than most of its neighbors. It is the pleasure and duty of this association to promote, improve, foster and advertise the livestock business of Maryland, to spread the area of its influence, for the profit and satisfaction of the producer, purchaser and consumer.

The State of Maryland is fortunate in having a central terminal market, the Union Stock Yards Company of Baltimore. This market, as all others throughout the country, is the point at which prices are established regardless of where the sale is made. Central markets came with the advent of railroads and transportation. Before these markets were established it was necessary for drovers and producers of livestock to move it on foot to the center of population and wait until a sale could be made. There were no cash markets as today where buyers are congregated and sales are made by trained, experienced, and competent salesmen, and a check rendered by bonded, reliable commission firms. At terminal markets, livestock is weighed by non-interested persons on tested scales with self-registering beams. All animals have good quality feed with pure water, and everything is done for the care and comfort of the livestock and for the interest of the shipper. There is a conservative charge, naturally, for the feed and service rendered. Everyone knows the expenses of operation include maintenance and repairs, taxes, water, lights, labor, and insurance. A stockyard is the same as any village or community with its water, light, sewers, streets, watchmen, and tradesmen. Every stockyard in the country could handle twice as much livestock with an increase of only about 10 per cent in labor and other expenses. This would lower the unit cost to each shipper and be a saving to all. The Baltimore yards have 30 acres under roof, and it would not be economy to tear down any part of it now any more than it would be for you to have destroyed part of your buildings during the drought period of 1932 when you had no use for all of them.

After we have built up a system of centralized livestock markets where buyers and sellers meet and determine the price according to supply and demand, and where both can operate efficiently and satisfactorily there is a clamor for change and decentralization of livestock markets, with the direct result of raising unit costs of marketing throughout the whole line.

Buyers work usually on salary, with a few order buyers on commission. Time is money, and the buyer's salary is naturally charged against the purchases, so much per unit. If the livestock is centralized, one buyer may purchase six to eight hundred cattle very easily in a few hours, while it may take a week to buy the same number when scattered. Auction sale markets advertise their great savings, but in reality there is none. If it costs the buyer more, it comes off the price to the producer. While some sales at auctions are made high they are usually discounted to the purchaser, and the mangement of the sale charges the difference to advertising. Very few are able to get the top price.

Those who sell direct to the packing plant supposedly save the terminal market expense. I doubt it. They lose more in sale price than they could ever save.

In 1933 there were slaughtered in Baltimore approximately 105,000 calves; 43,000 is the total 1933 receipts at the yards. Forty percent made the market for the other 60 per cent., and this 40 per cent. was not the top end either. One trip through our calf department would convince any doubting Thomas on this. Don't blame the packer, for it takes two to make a bargain, but the producer, who is the loser, with his penny so close to his eye he can't see the dollar, is to blame for the Baltimore calf market being lower than that of our competitors. With a greater number offered on our market, buying interests would be attracted and a just price created.

We have no argument with any part of the livestock industry, but it's with the same idea in mind, which a parent has when, punishing a child, he remarks, "It hurts me more than it does you," that I bring up such a subject as direct buying or selling.

The livestock industry is so interdependent that it is impossible for one to suffer without hurting all the rest of us. The packers, commission firms and all want the producer and shipper to make money. If there is no profit the tendency is to get out of that particular business, curtailing the business of all of us.

There is a vicious circle of price cutting by various concentration yards and auction markets. To move the livestock from that yard that day, a price is put on it, to make it move in competition with other yards, both large and small, and the only way to do this is to undersell. The purchaser of this cheap livestock forces all his other "buys" after that, in line or no buy. Then when the product of this cheap livestock comes into competition the seller can underprice everyone, forcing all in that area to bear down on the live market, attempting to get in line with his product price, and around goes the circle again, each time hitting a lower level, with the producer suffering. Something similar could happen in a small way at terminal markets, but the fewer men and the higher trained men there do not leave as much room for "weak sisters."

Maryland has been getting much publicity lately in national papers on the type of livestock in breeding herds within the State and the growth of these herds. I believe we could continue, profitably, to enlarge our pure bred herds and flocks, but more especially our commercial cattle herds and sheep flocks can be increased many times in order that our State can market the products of the soil, through livestock for a more profitable and permanent agriculture with the full use of advantages and facilities at hand.

TOASTMASTER JONES: Ladies and Gentlemen: I am very glad that we have Mr. Cash with us to give us this information on some of the things that are valuable to us people who are trying to raise a few cattle. I think as we get better acquainted with him we will know a lot more.

We are particularly honored this evening, I think we should feel it a great honor, that the Mayor of Baltimore should think it worth while to come to this livestock meeting. He does not need any introduction.

I have no doubt many of you know him better than I do. He is a gentleman I have known for a long time, and I hold him in the highest esteem. We are glad to have Mayor Jackson talk to us at this time.

MAYOR JACKSON: Mr. Chairman, Distinguished Guests, Ladies and Gentlemen: When Mr. William Schluderberg called me up and asked if I would come out here this evening, I was very glad to accept his invitation. I am sorry that I did not arrive in time for dinner. I assume that you had beef. I attend an average of from three to four banquets a night during the winter season, and frankly, I get tired and sick of looking at chicken and turkey.

I am glad to come here among a lot of live people tonight, coming from good stock. I am sorry that Dr. Patterson is sick. Your chairman said that we all loved Dr. Patterson so. That reminds me of an experience of a man who was invited to speak before an association, and he arrived too late to meet the chairman or members of the committee in order to get some points on which he could hang his opening remarks. While sitting on the platform he heard a man on the committee—we will call him Dr. Smith—eulogized and praised to the skies. He thought he could get a good start by telling of his friendship with Dr. Smith and of his relations with him, so when he was called upon to talk he first talked about Dr. Smith, what a wonderful man he was, what a worthy citizen he was, and praised him very highly, and finally he said, "It may surprise a great many of you to know that Dr. Smith actually brought me into the world." A fellow sitting next to him said, "you damned fool, Dr. Smith is a veterinarian!"

I am certainly sorry that Dr. Patterson is ill, and sorry that Ed. Warfield is ill.

Dr. Lowe mentioned what other countries are doing to encourage the breeding of livestock, then he mentioned what Uncle Sam himself was doing. That reminded me of a story of a woman who had a son in France during the war. She had not heard from him for weeks and months. She became concerned, and wrote to the Secretary of the Navy in order to get some information about her son without success; she wrote to the Secretary of War for information about her son without success; and then she thought she would write to the President of the United States, and she told the President in the letter she was writing that she had written to the Secretary of the Navy, and received no information; she had written to the Secretary of War and received no information; and "now, Mr. President, I am asking you for information about my son, and if I do not get it from you I am going to write to Uncle Sam himself." I am sure that Dr. Lowe will not take offense when I tell you that Uncle Sam is you and me and all of the other taxpayers of this nation, and whatever Uncle Sam does, whatever the State governments do, and whatever the municipal governments are doing whether it is for the improving of the breeding of livestock, or anything else, we should be conscious of the fact that the people in the long run pay the bill and expect value received. That has been the trouble with this nation, if there is any trouble at all. I am concerned about the immediate future of the country. I am not here tonight as an alarmist, but this Government has got to stop spending money without getting value received from every dollar expended.

I am sorry that I could not be present this afternoon in order to extend a word of greeting when you were in convention assembled. I take this opportunity, however, to extend to you and to all the members of the society that is holding its convention, its nineteenth annual convention in Baltimore, a welcome to Baltimore. You do not need it particularly, you need no welcome from me especially, because Baltimore is a part of Maryland, a big part of Maryland. It has more than half of the expenses, and it pays more than half of the taxes, so that makes us at least a big part. Nevertheless, you are welcome to Baltimore, we are glad to have you come here.

Now, I did not come particularly to make an address. I came to express my pleasure at having you in Baltimore, to express the hope that you will enjoy yourselves while here, to express the hope that out of your deliberations will come some material benefit to the industry which you represent. But I cannot let this opportunity pass without saying this, because it has not only to do with the welfare of the people who live on farms, the people who live in rural and small communities, but it especially has to do with the people living in big cities. The large cities are especially interested, by virtues of the introduction of machinery into every industrial and commercial activity of life, by virtue of shortening hours, and that applies to farmers as well as to industry—I do not believe you get up on the farm quite as early as you did years and years ago. You may, I do not know.

The point that I want to make is that America is coming into a period where we are going to have a certain amount of permanent leisure, and America must prepare, the people of America must prepare to evaluate and properly get from that leisure all that there is to be gained from it. America—the people of America are capable, they have proved their capabilities to invent, to create, to produce. We know how to be in a rush, in a hurry, but we are less prepared as a people profitably to employ our leisure time, to the best of my knowledge at least, than any nation on the face of the earth. There is a great difference between dissipation and leisure, and we are coming into a period of an age when we are going to have more leisure time, and we must turn it to good results.

We are, in my opinion, coming into a period when industry must meet its obligations, and commerce must meet its obligations to all the people of the nation, not only to the leaders, but they must meet it to the community at large, and the Government must prepare itself to do the same thing. You cannot, my friends, take from the great mass of people a greater proportion of what they have produced for the benefit of a few. When I say "few" I mean comparatively speaking, for the wealth of the nation is now concentrated in a few. I am not a Socialist. We cannot have the wealth of the nation in the hands of a few without the pendulum swinging to a point where it must be redistributed, and that is exactly what has happened in this nation. We are redistributing it today in the form of what is known as "Emergency Relief" in order that people unemployed might be fed, clothed and taken care of. That is un-American and cannot continue. We have built up in this nation or there has been brought upon us in this nation, by virtue of the introduction of machinery and the evolution in business, what is known to the insurance actuaries as an accrued liability. In 1840 the average life of the American citizen was 39. Today the span of life has been increased to 60, and yet we are confronted with a situation where industry does not accept the older man or woman. They are among the unemployed. There are millions, at present more than ten million, of unemployed people in this nation. That is conservatively speaking. There are more than five million people in this nation who were gainfully employed in 1929 who will never be gainfully employed again. Until our National Government and our State governments, until our great cities where is centered the large proportion of our population, recognize that fact, there is no use, my friends, of talking about unemployment insurance, or old age pensions, or anything of that kind. First, we have got to get to the root of this thing and the root of it is the accrued liability in the form of unemployed people in this nation.

From there, we must begin to meet our obligation. If those people are not provided for, your position and my position in society will probably not be secure, and the people in the rural districts and the people on the farms have access to the legislative halls of Congress and the legislative halls of State Legislatures—you have a controlling influence in those halls. You know what I mean by that. Congress is not controlled by virtue of the number of voters in Congress, by the city of New York, and the city of Chicago, and the city of Philadelphia, and the city of Wilmington and the city of Buffalo, or the city of Baltimore. The control of Congress is in the hands of the farmers of the rural districts of this nation. You folks will have a great influence there.

I am glad to welcome you to a city, that has its financial condition as sound as any city in the United States. I am glad to welcome you to a city that has a balanced budget. I am glad to welcome you to a city that closed its fiscal year with a surplus of $3,000,000 and has cash in the bank. I am glad to welcome you to a city that has not denied to its people during the depression one single function of government that the people were receiving in 1929 and prior thereto. We have been economical but we have had abundance. We have had to recognize the fact that you cannot do charity through a public treasury or payroll except to do it on the basis of charity. We have brought the cost of government down to the point where the people could meet their tax obligations. That is the reason we could meet these conditions. Business is not going to move forward in this country until people have confidence in the country in the future. The President closed the banks a few hours after he went into office because there was not enough cash money in the banks to meet the demands of the people, of their depositors. Have you noticed the bank statements published in your newspapers within the last month? What is the situation that you are confronted with? The banks in the country are literally bursting with money. Take the biggest bank that we have in Baltimore, the First National, it has $160,003,000 on deposit, and only $20,000,000 in commercial loans. Until that money is employed and until business men have sufficient confidence in the future that they are willing to contract for the future and obligate themselves for the future, and until people interested in building construction have sufficient confidence in the future that they are ready to start construction of buildings, we are not going to have prosperity.

Go out here, my friends, feeling confidence in yourself, with the determination that this nation is going to be prosperous. Build that thought up. It must begin where you fellows work. I am speaking to you as farmers. You have got to have confidence in the future, in order that society in general may benefit. It will mean much to every man and woman and child of this nation. What they want is security in the home, security in employment, and security in old age.

Again I welcome you.

TOASTMASTER JONES: I think we are to be congratulated in having the Mayor with us. I am sure we will all profit by what he has said.

Now, we did not finish our program this morning. There was one topic, "Horse Topics," that we did not have. We will hear from Dr. A. L. Brueckner on that subject, "Horse Disease Experience in Maryland."

HORSE DISEASE EXPERIMENTS IN MARYLAND

By DR. A. L. BRUECKNER
Acting Chief, Live Stock Sanitary Service Laboratory
College Park, Maryland

In a partial review of the literature regarding diseases of horses in Maryland, we have discovered a booklet published in 1811 in Baltimore by Henry C. Hicks of Dorchester County. This is known as "The Gentlemen's, Farmer's and Traveler's Pocket Companion," containing many valuable preventatives incident to horses, cattle and sheep; also, many receipts for the care of the same when diseased. To quote in part from this: "Thus the blood being corrupted by feeding in watery ground, and with the grass lick in the water, which thins the blood, that it is not able to fill up the office for which it is intended by nature, and when the water that is in the blood passeth through the flesh and is received in the open part of the system, and leaves the blood putrified and death is the event. Wet weather and heavy dews have the same effect to breed disorders, for the dew being of some peculiar taste to the beast, causes him to eat many unwholesome weeds, as well as to lick up the webs and poisonous bugs and worms; as also the dew which falls on the horse may soak into the flesh, and then the blood must have some part, and thus it begins to pass slowly on the surcus which leaves its disordered dregs. By the congealment of jelly where the brain is considered to be; and by leaving the above dregs and pestering the head with pain, brings on the blind staggers, or the mad and frenzy fits, which may be generally prevented by some care: as thus, in rainy weather, keep up and feed, as also your spare horses and colts every night, and likewise in the morning until the dew shall be off."

Although this description of the disease as known at that time is none too definite, it still gives clues as to the time of year when it appeared and some of the symptoms, described rather briefly in the name blind staggers, or the mad or frenzy fits, which lead us to believe that this is one of the first records of Equine Encephalomyelitis in Maryland.

In a bulletin published by the Maryland Agricultural Experiment Station in 1898, Dr. Samuel Buckley records his findings in some investigations of the so-called "new" horse disease in this State. The dates appearing in this publication indicate that he had been instructed on September 30, 1897, to cooperate with the State Veterinarian in these investigations. He called attention to Snow Hill, Pocomoke City, Westover and Jamestown as being locations where the disease had appeared. He summarized information as secured in the field as follows: 1—Death occurred in almost all cases; 2—Horses at pasture were more often affected than those in towns, but pasturage did not seem to be necessary since some were affected which had not been pastured for several years; 3—Affected horses rarely received treatment; 4—Young horses and colts were most susceptible, although old horses also were affected and died; 5—The ration usually was corn and corn fodder, pasturage inferior.

After seeing a number of cases in the sections mentioned he made a diagnosis of cerebro-spinal meningitis on the basis of a description of this condition as given by Professor Large of New York. The description mentioned above agrees in the main with Equine Encephalomyelitis as seen during the outbreaks of 1933 and 1934.

The next local publication concerning this condition bears the date of February, 1902, and the names of Dr. Buckley of the Experiment Station and Dr. W. G. McCallum of Johns Hopkins University. Attention is called to the fact that a disease of horses has been appearing in sections of the State for several years, with an outbreak of particular severity in the late fall and winter of 1900-01. This publication gives mainly the findings in regard to the pathological changes in the brain. In an added paragraph reference is made to the occurrence of the same condition in Southern Maryland during the same period. The report of the microscopic findings in the brains of some of the cases reads almost identically like similar reports on the disease as it appeared during the recent outbreaks.

Work was done along bacteriological lines on some of the cases, but it was not possible to recover any micro-organisms which seemed to be the causative agent.

During 1930 in California and some of the other Western States there appeared a rapidly spreading and fatal disease of horses and mules. Work at the University of California led to the conclusion that the cause was a filtrable virus which concentrated in the brain and produced marked nervous symptoms and in general a fatal termination. On the basis of these findings and the fact that some animals recovered naturally, attempts were made to produce an anti-serum to be used as an immunizing agent. In the Western States this serum when used on sick animals appeared to have some curative effects and also seemed to have protective value when given to well horses and mules. Following these outbreaks there was an apparent spread to other of the Western and Midwestern States, which lead to the statement by one investigator that the disease would move toward the Eastern States within several years. This assumption seemed to have been correct, when in the fall of 1933 there appeared on the Eastern Shore and in Southern Maryland a disease of horses and mules which displayed similar symptoms and with a similar causative agent. The records presented above seem to indicate rather clearly that this State had known the same disease on several occasions over a period of more than one hundred years, although it is rather hard to explain just how the infection has been carried over during the years between the outbreaks.

Because of the more or less favorable reports of the use of the serum in the Western States, at the appearance of the disease in Maryland in 1933 extensive experiments were started to try its use here. These trials were attended in some cases with apparent success, but the tabulated results at the end of the season indicated that little or no benefit had attended the use of serum. This result could have been anticipated had it been possible to have shown at once that the virus causing the disease in the West differed in some respects from that of the East, in particular in regard to immunization.

General suggestions as to care and management, such as protecting animals from flies and mosquitoes by the use of sprays or keeping in darkened stables, and removal from low pastures were given also, on the basis of work done which had shown that mosquitoes were capable of transmitting the virus from one animal to another.

With proof of the differences in the virus of the East from that of the West, commercial producers of the serum chose to make a serum to be used in both sections or one serum for each section. When the disease again appeared in the fall of 1934 further trials were carried out with the above materials. The results of the use of such serum as a curative indicated that in that capacity little benefit could be derived from its use, which might be expected because of the fact that the central nervous system is most affected and damaged nerve tissue cannot easily be repaired. The results of the use of the serum as a preventative were rather satisfactory, since there were less than 1 per cent. of cases in well horses given serum. Some cases, however, developed within two days after the serum was given, which was an indication that the disease was developing when the serum was given.

Numerous laboratories have carried out work looking to the production of a vaccine which could be used for protecting animals throughout an entire season or longer. This would offer a distinct advantage over serum, since the latter affords protection only for about three weeks at the longest. The vaccine trials at the Maryland Laboratory were attended with rather uncertain results. The United States Bureau of Animal Industry, however, produced a vaccine which gave promise of being of value. Field trials during the last season were carried out, the results of which have not yet been made public. It is understood that several commercial producers are preparing vaccine for sale, so that there must be foundation for such production.

The Live Stock Sanitary Service will make plans to conduct some field experiments with this product if this year's results indicate that it has value, and further, if money is available for such work.

Work is also being conducted with other diseases of horses. Of these Botulism or Forage Poisoning occurs most every year and is due to botulinus toxin, which is produced in the feed, hay or pasture. In some respects this disease resembles Encephalomyelitis, but differs in that a greater number of cases generally appear at one time, that as all horses which eat of the toxic feed become affected. There is an antitoxin on the market which has marked protective value, but little curative property, which latter condition can be explained of the fact that the toxin becomes attached to the nerve tissue and the damage done is not easily repaired.

Other cases of disease in horses and mules are seen which resemble in some respects each of the above conditions. Further experimental work is in progress to more clearly define such conditions. Poisoning of animals by poisonous plants is also the cause of illness and death. Work along this line is also contemplated with the idea of cutting down such losses.

TOASTMASTER JONES: We will next hear from Mr. K. A. Clark, now of Frederick County, but for some years with the University of Maryland, on "Some Horse Observations in the West."

SOME HORSE OBSERVATIONS IN THE WEST

By MR. K. A. CLARK

MR. CLARK, Frederick County: I have two observations to make in connection with this matter. The first one is that up to now we have been enjoying the finest program that we have ever had. I congratulate Mr. Jones and the secretary and whoever else had part in arranging it.

The second observation is that I feel entirely unable to serve you up to the high standard you have been having. You all know me; you know I am a very poor speaker, and even a poorer writer.

I was particularly taken a few minutes ago by the remark Mr. Jones made, I always agree with him in most things, but I surely do in this, when he said Maryland was the best State in the Union. I had that brought home to me even more forcibly during the recent trip that I made out West, for I do not believe any man or woman in Maryland could go to that section of the country, as I went, and come back without a greater appreciation of the good old State of Maryland.

This past fall when we were needing more horses, we made an attempt to fill our requirements locally, we traveled among our neighbors in our own county and into neighboring counties, but we soon discovered that we could be unable to find what we wanted close to home, and the decision was made to go out West where we had made previous purchases and try our luck. I went to Breckenridge, Minn., where I spent about three weeks, trying to assemble a shipment of horses for Frederick County. And, by the way, that is the first time Frederick County has been mentioned. I have been hearing of Montgomery County many times, but not Frederick. I can perhaps convey to you a more vivid picture of what I saw by telling you of a few incidents that happened during my short stay out there. Most farmers and horse breeders whom I visited were potential buyers more than they were sellers, and I frequently had those Western farmers out there ask me or say something like this, "You have been around. Where can I buy a good mare or colt or two?" I tried to evade the question as much as I could, because I was after just such horses myself. That was a great horse region years ago. They used to ship 25 to 35 carloads of horses annually to the Eastern market. Last year I was told by them that only eight carloads were shipped out of that neighborhood and five of them had come in from Montana and further west, so the net amount was three carloads shipped as compared with the 25 to 35 of years past.

Those people are trying to get breeding stock, particularly horses, about the same as we are, much to our surprise. I found geldings just as high as mares, but a great deal easier to buy. We bought a pair of mares from a man by the name of Willie Carson, full sisters, and I tried to buy the mother as well. We were in the house in the kitchen, and by the time we got down to the point of our talking about the mother, Mrs. Carson said, "Surely, Willie, you are not going to sell Blossom. You know we have not enough money to send our boy to school, and she is the only thing we have that he is particularly interested in." I did not buy the mare, I could not even try to buy her. I had sympathy with the devotion of that family to her.

During the course of these travels I covered some twenty counties, twelve hundred miles in distance. It was my privilege to observe about twenty-six or twenty-seven stallions owned by perhaps the fifty or more horsemen or farmers and purebred breeders whom I met.

As I compare these stallions now with about a similar number in our own county, I would say that it is about a stand-off. They had two or three stallions that I would call right good horses, probably three or four others would pass as good, two or three acceptable, if you did not get too critical, and the balance were just horses of average rank. In other words, I saw in that community, as well as in our own, a lack of real good draft stallions. The best proof there is for that statement in our county and in practically every other county in the State, is the fact that the real good heavy draft stallions are busy during the breeding season.

My most disheartening observation was that in connection with their feed crops. If any of you think we are not blessed in this State, I would suggest that you go to Sisseton, South Dakota, and spend a few days there. They do not have even enough straw for roughage. The western barns are not designed to hold large amounts of hay, an average barn holds only ten to twenty tons of hay. They usually have the straw outside. This year most of the feed crop had been cut up and blown into the tops of those barns. It was not an isolated experience to see horses and cattle feeding on top of manure heaps made during the past years. We saw that every day as we traveled. It was almost the exception where they did not have the horses and cows out of the barnyard and in the field feeding in that way.

We bought three mares from a farm of over eighteen hundred acres, and this year they did not even get their seed back from their crop. Five years ago those men were regarded as well-to-do, substantial farmers. Today they are paying for their operations out of the accumulations they made in former years. Two or three more years at the same rate they are now going will practically put them out of business.

The first day I was in Breckenridge, I saw parked in front of the hotel three Federal Land Bank automobiles. The Federal Land Bank operators are very active. They are making a lot of loans on lands, and they are trying to sell the farms they have acquired through foreclosure.

The Government has purchased many cattle out there and taken them out of the country. Farmers there have practically discontinued, through the pressure of feed requirements, the production of hogs. There is no corn in the country except what is shipped in. The stock we saw there for the most part were pretty bad; I shudder to think what they will look like by spring if they are still alive.

I would like to make a reference to their horse barns. Most of the barns have a wide aisle through the center with the horses facing the outer wall. They are not bank barns, such as we have. They are more comfortable and better ventilated in summer. The caretakers go in beside their horses to feed them. We feed from in front.

The people of that section are probably a little more reactionary than we are, perhaps this is because they are more progressive, less tolerant of social and civic regulations. I doubt whether they are more radical than we would be under similar circumstances, or than we may yet be.

I would like to say a bit about the character of the horses, the differences as their stockmen told me between theirs and ours. For the most part their horses are sound, particularly good at the ground. They are in good condition the year round, which I think is more natural from the standpoint of the breed, and they seem to produce larger and better shaped hoofs than we produce. I found very few unsound horses, very few with heaves or with other imperfections. Their colts do not develop as fast as ours; it takes them longer to mature, but in the long run they attain a greater weight. They do not break them until they are between three and four years, I should say nearer four years, while the system here in most cases is to break horses at two or three years at the latest.

After a great many trials and tribulations we finally landed in Maryland and were glad to get here.

I have enjoyed this meeting, although I had trouble in getting to my feet, my next neighbor told me when I got up to keep my big feet out of it. I think the Stockmen's Association can mark down the 1935 meeting as the best they have had.

TOASTMASTER JONES: I do not want to continue this meeting any longer without having the gentleman on my left say something. I know all the Stockmen will want to her from Dr. R. A. Pearson, president of the University of Maryland.

DR. R. A. PEARSON, College Park: Mr. Toastmaster, Ladies and Gentlemen: I do not think I should take much of your time when it is getting late and there are several more fine addresses.

I am glad to bring you greetings from the University of Maryland, although my superior, General Riggs sitting over there, ought to do that.

I want to say it is a great pleasure and privilege to the University of Maryland to work with you. I know of the fine things that this Association is doing. Dr. Symons tells me of the splendid cooperation you give him in the Extension Service of the University.

Tht University helps you in four ways: First, we are teaching a considerable number of young men who come from Maryland farms to College Park, teaching them the fundamental principles of this great industry; second, Dr. Patterson's department is carrying on extensive research work on the problems of the livestock men, and you are all very well acquainted with its great value to the State; third, it carries instruction through the Extension Service to all sections of the State; and in the fourth place, through the University of Maryland and the State Board of Agriculture, we are working out problems of great importance, such as the control of animal diseases, bovine tuberculosis, Bang's Disease, etc., which has reduced the percentage of animals dying from those diseases from 35 per cent. or 40 per cent. to 10 per cent. I have not the time to go into any more detail as to that.

In conclusion, we all appreciate the importance of your branch of agriculture. We believe that civilization itself is dependent in a large measure upon successful livestock work. We believe that livestock is fundamental to agriculture, and agriculture is fundamental to national progress.

I am proud to know you, to work with you, and to serve you.

TOASTMASTER JONES: We shall be glad to hear next from Mr. E. G. Jenkins, generally known as "Daddy" Jenks, or the next subject, "Maryland Stockmen and 4-H Club Work."

MARYLAND STOCKMEN AND 4-H CLUB WORK

By E. G. JENKINS
State Boys' Club Agent
College Park, Md.

Mr. President, Ladies and Gentlemen: A young fellow came from one of the smaller towns of Maryland into Baltimore, lived here a while, and one day met his friend, an old buddy from back home, and he said, "Bill, perhaps you can give me some advice. A while ago I met a girl who was a peach. She has entertained me at her house a number of times, and been very nice to me. A little while ago I took a notion to take her to the theatre. I bought two very nice tickets, the best I could find, bought her some nice candy, took her down to the theatre in a taxi. We saw a good show and after the show we went out for a very nice supper, and after the supper I took her home in a taxi. And now what I want to know is, when I got her home and said good-night, should I have kissed her?" Bill said, "No, daggone it, she had had enough."

I am quite sure if you look on your program you will not expect me or my good friend, Pete, or my other good friend, Bill, still on the program to kiss you good-night. I am going to leave that to you.

May I take a moment or two to add a few words to what the Mayor of Baltimore has said in relation to your own communities and your own community functions. I do not know how to link it up exactly in the two or three minutes alloted to me with what the Mayor so forcibly brought to your attention. I will leave it to you to do the linking. I would like to point out to the Mayor that many, not all of the very prominent, able business men of his city came from the farm. Many of the great leaders in the cities today, the great leaders of the last few years were farm boys. Today there is very little opportunity for the farm boy to go into the city as those boys did and work their way up to places the farm boys of years past held. We all know that the outstanding young men from your counties went to Washington, to Frederick, to Hagerstown, came to Baltimore in days past. The farm as you know cannot take care of all of its young men and its young women. Now, they are having to do something. I am told by the Department of Agriculture that some five million young men and young women who in the years before 1928 or 1929 ordinarily would have gone to the city are now damned back in the country. I am glad to use that word, for some of them are beginning to feel that they are damned back in the country.

I submit to you livestock men that in my young manhood days the young man who was interested in livestock went into a new country in the West and found his opportunity along livestock lines. A youth cannot do that now not only for the reasons that Mr. Clark has presented, but also for the reason that there are no new lands out there. He cannot do that now. I submit to you gentlemen that the young men in your county have no new land to go to. Secretary Wallace, of the Department of Agriculture, has very definitely written and talked about a new land, one that my sons and I have been talking about for seven or eight years. We three are working for, driving for that new land with all the force we can. Dr. Symons and others of the Extension Department who have a vision, are helping us in every way they can to carry the vision to your boys and girls of a new land that is left to them. It is "the land of the Spirit and of the Mind." That is the new attitude toward the situations into which they are coming. It is a new attitude for these young men and young women to bring about the situation which the Mayor has just told us must be brought about if our land is to be saved. You may take that back to your home community.

Mr. William Schluderberg, as chairman of the Agricultural Committee of the Kiwanis Club of Baltimore, gathered around him a few years ago a few very busy and very active men of this city, and those very busy men have given many days of their time to the forward movement of this thing I have been talking about, the building up of a new attitude in a group of young men in our counties. They visit them in their home, talk to the young men about their affairs. Each has a particular young man he works with. Mr. Schluderberg has a boy about sixteen or seventeen. It is interesting to see them together. The boy calls Mr. Schluderberg "Bill," and Mr. Schluderberg calls the boy "John." I believe Mr. Schluderberg will agree that the men are getting more out of this than they give to the boys. Mr. Jones, our toastmaster, missed only two meetings of the 4-H Club he led for seven years. Some of the young men of those clubs are in this audience, they are among our leading livestock men today. I wish I had time to give some of the results of the 4-H Club work. I would like to bring to your attention some of these things. Mr. Cunningham of Washington County suggested and then helped to promote a Colt Club, and thirty-three boys showed twenty-five colts at Hagerstown this fall—things of that sort.

I am asking you, as livestock men, to go back into your counties and make a study, look into the situation, get in touch with your county agent. The young men of this State, five hundred of them, over eighteen years of age, are organized and active. See whether you cannot help them to go forward and get this new vision of "the new land of the Spirit and the Mind."

TOASTMASTER JONES: We will now hear from Dr. J. D. Blackwell on "Maryland Stockmen and Vocational Agricultural Students."

DR. BLACKWELL: Mr. Toastmaster and Members of the Maryland Stockmen's Association: You know we fellows up here at the head table, we sit here and watch you go one by one. You know that old story that you have heard so often of the speaker who towards the last of the program—I was the seventh and now I am the ninth—and as he sat there and watched them drift out one by one until when he started to speak there were only two people left, and he said to the other man, "How does it happen that you stayed?" and the other fellow said, "I am the next speaker." At least I have more than that.

MARYLAND STOCKMEN AND VOCATIONAL AGRICULTURAL STUDENTS

By DR. J. D. BLACKWELL
State Director of Vocational Education

The fifteen hundred students enrolled for vocational agriculture in the forty-three high schools of Maryland could well be called the future stockmen of Maryland, so closely related is the instruction they receive to livestock production. In fact, the first of the four years of high school instruction pupils receive is often in animal production. Each boy enrolled in animal production is required to do practical work with animals on the home farm. This practical work may be in the nature of a home project or other practical work. The home project may consist of personal ownership and care of a registered calf, swine, sheep, or a standard bred flock of poultry, or it may consist of miscellaneous practical work on the home farm.

The Farm Bureau's F. F. A. Statewide Project Contest, held annually, has done much to stimulate interest in the growing of pure-bred animals, since the winners in the contest must have grown pure-bred animals in competition with F. F. A. members throughout the State. The winners are selected on the basis of project record books, as submitted to the State Project Committee, supplemented by information secured by the State Supervisor, during his personal supervisory visits to boys on their home farms. More than five hundred such visits have been made by him, each year for the last ten years, to the boys enrolled for vocational agriculture.

Originally, a number of Maryland agricultural associations awarded the gold, silver and bronze F. F. A. medals. Due, however, to existing economic conditions these associations have gradually withdrawn their financial support until the Farm Bureau Federation is now the only association assisting financially. Personally, I feel that their so doing has been a grave mistake, since the boys need the financial and moral encouragement from many associations instead of from only one association, and since the different associations need to be making more direct contacts with these young men—the leading farmers of tomorrow. I say "leading farmers of tomorrow," because it is evident that the leading farmers of tomorrow must be educated for their chosen work.

During the second year of the agricultural curriculum, boys usually devote much of their time to the study of crop, but during the third and fourth years they devote much time to the study of the economic and farm management phases of agriculture. During the past two years teachers have cooperated with the University of Maryland Agricultural Extension Service in carrying out the provisions of the Agricultural Adjustment Act. As all Maryland stockmen know, much of this work has been along the lines of livestock production. They also know that the success of the Agricultural Adjustment Act has been due to the educational phases of the Act. The service rendered by approximately 4,000 teachers of vocational agriculture and 80,000 members of the F. F. A. throughout the United States in connection with the A. A. A. programs is indicative of what may be accomplished in the future.

During 1933-34, a foundation for a cooperative educational program was laid by representatives of the different livestock and agricultural education agencies. As an example of the way in which cooperation between the Maryland Stockmen's Association and the Vocational Agricultural Students may be developed, I wish to call attention to the fact that already the Poolesville Chapter (Montgomery County) of F. F. A. is actively cooperating with the Maryland Livestock Production organization. I see no good reason why such cooperation should not exist in each of the forty-three local chapters of F. F. A.

TOASTMASTER JONES: I know those who have left will miss a great deal in not hearing our next speaker, Mr. William F. Schluderberg, on "Our Mutual Interests."

OUR MUTUAL INTERESTS

By WILLIAM F. SCHLUDERBERG
President, The William Schluderberg-T. J. Kurdle Packing Co.
Baltimore, Md.

MR. SCHLUDERBERG: When your secretary asked me to address you on the subject "Our Mutual Interests," I was glad to comply with his request, for the Esskay management with others engaged in the meat packing business have always felt that livestock production and meat packing are two phases of one industry, with mutual problems and mutual interests.

I am well aware of some of the serious and difficult problems with which livestock producers are confronted. The meat packing business, I can assure you, also has many problems. The cooperation of all who are engaged in any of the various phases of the livestock and meat industry is necessary if progress is to be made. Mutual interests of producers, marketing agencies, packers and retailers must be considered and solved, for conditions which adversely affect any of the parts of the livestock and meat industry affect the whole industry.

Meat packers, of course, are vitally interested in livestock production problems. The packing industry is based on livestock production. The decisions made by producers in solving the general problems of livestock production determine the account and kind of livestock which will be available for slaughter at any time. The products obtained from the animals produced, whatever their kind and number, must be moved into consumption. This is the job of the meat packing phase of the livestock and meat industry.

Obviously, the point at which the producing and the packing phases of the industry join is the livestock market. The prices which producers receive for their livestock and the prices which packers pay for their livestock supply are vital factors in the operation of both phases of the industry. But what factors determine livestock prices? How does a packer arrive at the prices he will bid for your livestock?

Probably no feature of the packer's business has been so little understood as the matter of prices—the price the packer pays for livestock and the price he receives for meat. Actually the packer is a vital link between consumers of meats and the livestock producers. In effect, the packer is the producer's processing and distributing agent.

Consuming demand for meats and available supplies determine the price which the packer receives for his products. The packer has nothing to say about what consumers will pay for his products or about the supply of livestock offered for processing and consumption. Meats compete with other foods for the consumer's dollar. If the price of meat reaches a point where consumers no longer consider it good value, they don't buy it, but buy some other food instead. But meats are perishable and must be sold daily. The price the packer receives, therefore, is that price which will just move the available supply into consumption.

From the price the packer receives, he must attempt to pay the producer and also processing, selling and transportation costs, and other expenses such as processing tax. Sometimes, such as during periods of short livestock supplies or during periods of low consumer demand, the price of livestock may be higher than the price justified by prices received from consumers for meats. To survive such periods, packers draw upon reserve funds which were accumulated gradually during times when the supply and demand situation was better balanced and more nearly normal.

During periods of short supplies of livestock, the high prices for livestock referred to above are paid due to competition among killers for sufficient numbers of livestock to hold their own customers, and the desire partially to meet overhead costs and to continue in business until normal price relationships again occur.

The price of livestock, therefore, is largely determined by what consumers pay for meats. Meat prices are not determined by livestock costs to the packers, for the obvious reasons that packers cannot ask an arbitrary price for meats and expect to sell the supply on hand.

Both packers and producers are much concerned with the amount and nature of the costs involved in the packing phase of the industry. The greater the costs, the smaller is the proportion of the price received for meats that can be returned to the livestock producer.

Services which consumers insist on having from packers and from retailers such as sliced bacon in half-pound packages, and sausage or lard in small containers, widen the spread between consumers and producers. Such service and packaging costs are justifiable only because consumers are willing to pay for them and will buy more products when packaged as desired than when not packaged. Such service costs, therefore, are beneficial to producers because they satisfy consumer wants, increase volume of sales, and improve the competitive position of meat and meat products in respect to other foods.

The packer's cost of doing business is always of much concern to the producer. Consumers and retailers buy their meats from those who sell what they want at the *lowest* price, desired quality considered. Producers sell their livestock to the slaughterer who will pay the *highest* price. In the packing industry, therefore, the pace is set by the most efficient operator.

It is a well-known fact that meat packers operate efficiently. United States Department of Commerce statistics show them to be efficient, and very few industries operate on as narrow a margin as does the meat packing industry.

While manufacturing costs are, comparatively, not a large item affecting livestock prices, transportation charges may be. The freight rate structure has a profound effect upon livestock prices, and has not been given proper consideration by producers and Eastern packers. In the few minutes remaining to me, I want to point out to you how the present freight rates on livestock and packing-house products are depressing the price of livestock in Maryland and the East in general, including also Ohio, Indiana, and Illinois.

Ordinarily two freight or transportation charges are required to reach the consumer. There is the charge incident to delivering the livestock from the farm to the slaughter point, and the charge incurred in getting the meat products to the consuming market.

Since the territory immediately surrounding the cities of the Atlantic Seaboard does not produce nearly enough livestock to meet consuming demands, livestock—or their products—grown farther west, must be shipped in to satisfy the Eastern requirements. It costs about 75 cents to $1.00 per 100 pounds to bring hogs from Chicago, St. Louis, Indianapolis, or Cincinnati, to Baltimore or other Atlantic Coast cities. Shipping costs, therefore, should operate as a protective tariff for the benefit of Maryland producers.

The catch in the situation that tends to nullify this freight advantage, however—and it is this feature that I wish to emphasize—is the relationship existing between the freight on live animals and on packing house products.

If the meat and products obtained from a 200-pound hog can be shipped from Mid-Western points to the Eastern markets for less than the cost of shipping the 200-pound live hog, the Western slaughterer has an advantage in reduced costs and therefore can undersell the packer slaughtering in the East. Since the Western packer with this freight advantage sells on the same markets as the Eastern packer, the Eastern packer must try to buy his livestock supply for less money. The lower bids for livestock by the Eastern packers lower the general level of livestock prices, enabling even the Western packer to buy his supply for less. And so the vicious cycle continues—a depressing influence on livestock prices in those territories into which meats can be shipped at a lower cost than the live animals from which the meat is obtained. The low point of this price spiral is reached when producers no longer find it profitable to raise livestock and decrease or stop livestock production. Shorter supplies of livestock result in a strengthening of prices, and the cycle is repeated. The depressing influence of the inequitable freight rates is continuous and tends to keep prices down toward the marginal level for producers.

Since the amount of meat and packing-house products yielded by a 200-pound live hog is known and is a definite ratio to the live weight, it is logical to expect that the freight rate on live hogs and on packing-house products should be in the same ratio to each other as live and dressed weight (for hogs 100 to 130 and 140), so that either the live hog or products from it could be shipped at will with no special advantage either way, and without any depressing effect on the livestock prices.

Furthermore, it would seem logical to expect that the same relation between rates on livestock and packing-house products would exist between all shipping points and destination points in the United States. There is no logical reason why freight rates on fresh meats from Ottumwa, Iowa, to Chicago should be 70.9 per cent. of the live hog rate, while the rate on fresh meats from Kansas City to Los Angeles should be 252 per cent. of the live hog rate. But these varying ratios do actually exist.

It is logical to expect freight rates on finished products to be higher than rates on raw materials. Such a relationship exists except for livestock (the raw material) and packing-house products (the finished products), between certain points. For example, the live hog rate from Des Moines, Iowa, to Chicago is 30 cents per 100 pounds, while the rate on fresh meat is only 25 cents per 100 pounds.

With existing rates it actually costs $42.24, or 28 per cent., more to bring a double-deck carload of live hogs from Mason City, Iowa, to Baltimore than to bring the fresh meats and packing-house products that could be derived from that same car of live hogs. This gives the interior Iowa packer a freight advantage which is a sales advantage of 17½ cents per 100 pounds of live hogs. This 17½-cent freight advantage to Eastern markets (and proportional advantages to other points east of the Mississippi River) makes it easy and profitable for interior packers to pick any market most attractive to them. By using their freight advantage they can sell their products below local quotations and thus demoralize meat prices, which in turn affects the price local packers can pay for livestock. With a number of interior packers operating with increasing volume of products (a result of their competitive advantage due to freight rates), all markets to which meats can be shipped for less than the livestock from which the meat is obtained are affected by the constant threat of, if not actual continuous price cutting by these interior packers. Since these unfair freight rates apply from the interior Iowa and Southern Minnesota area to all points east of the Mississippi River, meat and livestock prices are depressed in much of the best livestock producing area of the country.

If rates on meats and packing-house products from the interior area were in proper proportion with the rates on live animals, local producers would have not only the full advantage of the freight rate on livestock, but also, and more important, the general tone of their market would be strengthened by the removal of the price-depressing situation that now exists.

A topsy-turvy, illogical, inconsistent freight rate structure actually exists and operates to the detriment of livestock producers the country over, and of meat packers east of the Mississippi River. While producers and Eastern and Mid-Western packers were busy with other problems or were sound asleep, a freight-rate structure favorable to slaughterers in the interior Iowa and Southern Minnesota area was set up. Some measure of how favorable these rates were to packers in this section may be obtained from the rate and extent of the growth of interior packers. In 1920 these interior Iowa packers accounted for less than 6 per cent. of the U. S. inspected slaughter. In 1933 they accounted for 12.33 per cent. The number of Iowa hogs bought direct jumped from 2,828,329 to 7,496,986. The number of hogs slaughtered at Iowa plants increased more than three times in this period.

What can be done about these unfair freight rates which penalize Maryland and other livestock producers, and submit Eastern packers to unfair competition? It might interest this group to know that the Eastern Meat Packers' Association has filed a formal complaint with the Interstate Commerce Commission, pointing out the inequalities of existing rates. Various stockyards companies of the Middle West have intervened in the case in support of the claim of the Eastern Meat Packers' Association.

This freight rate situation is only one of a number of problems which could be used to illustrate the mutual interests of livestock producers and meat packers. A number of mutual problems were discussed at the meeting held last February in Baltimore, attended by representatives of all the various phases of the livestock and meat industry in the State—producers, market agencies, packers, veterinarians, railroad men and college and experiment station workers, and other educational workers. As one of the packers who attended the meeting, I was impressed not only with the great variety of problems affecting the various branches represented and their mutual interests, but also with the obvious need for better coordination in the livestock and meat industry in the State.

There should be formed a strong, well organized Maryland Livestock and Meat Board, representative of all interests associated with the industry in the State, and capable of acting on behalf of the Maryland livestock and meat industry.

I heartily concur in the conclusion arrived at during the meeting last February to the effect that better animal husbandry equipment should be provided at the University of Maryland. The lack of suitable facilities for animal husbandry teaching and experimental work at College Park, has, I feel, been a handicap to the livestock and meat industry of Maryland.

The value of the Baltimore Livestock Show to producers in the Baltimore market area cannot be disputed, but it brings with it problems of proper effectiveness. It is only natural that packing companies owned and operated by Marylanders are more interested in livestock production in this State than are packers of a national character.

Prices to the 1934 Show should have been higher, but obviously a few local packers cannot assume the whole burden. It has been observed that shipments of good quality dressed beef into Baltimore have increased at the time of the shows. This fact has had its own depressing effect on the local prices of beef, and has cost a few of us a lot of money to maintain this show. The recent severe drought in the great livestock producing areas of the Mid-West and of the far West, which necessitated the movement of livestock from those areas to the East, has emphasized the possibilities of the East as a livestock producing area. It has confirmed the belief of local interests that a greater and better development of livestock production in the East and in Maryland especially is entirely feasible and would be a desirable addition to the agriculture of Maryland and nearby States.

The past year has been one of many problems and disappointments for both producers and packers. It is always difficult to predict what the future may hold, but it is especially difficult at present. There is no doubt but that during this year there will be curtailed receipts of livestock and smaller meat production than the record production of the past year. From the supply standpoint, the stage is set for higher prices. But the demand side—consumer purchasing power—must not be overlooked. How much more consumers will be able and willing to pay for the curtailed supply, no one can foretell accurately.

TOASTMASTER JONES: The moving pictures will be omitted in view of the lateness of the hour. I want to thank you all for the careful attention you have given to the speakers. My own hope is that our organization will continue to grow, and that we will have even more successful meetings in the future than we have had in the last two.

REPORT

OF THE

ANNUAL MEETING

OF THE

Maryland Tobacco Growers' Association

January 10, 1935

Baltimore, Maryland

The annual meeting of the Maryland Tobacco Growers' Association, held in cooperation with the Maryland Farm Bureau Federation, was called on Thursday, January 10, 1935, at the Lord Baltimore Hotel.

Due to illness, the annual address of the president was not delivered.

Mr. Wiliam Collins, assistant chief of the Tobacco Section of the Agricultural Adjustment Administration, delivered an address on "Tobacco Production Control and the Price Situation." During his discussion he pointed out the number of acres and pounds that the Government program had taken out of production and off the market. He also related how the prices had advanced, due in part to the program as well as the fact that the Imperial Tobacco Company and other interests bought large supplies of light colored tobacco. There seemed to be no doubt in Mr. Collins' mind that the Government had played an important part in the price situation for the flue cured, burley, and dark fired belts. Mr. Collins also pointed out that in the event a processing tax be reinstated on Maryland tobacco, that a totally different control program would be worked out from the one operating in 1934.

The manager's annual report contained brief remarks concerning the conditions of the storm-damaged 1933 crop and the market trends for this particular crop. Also, the operations of the Association for the past year were discussed. The books of the Association were audited and found to be in excellent condition. The offices were remodeled and given an impression of a more efficient and adequate service. The selling charge for tobacco was reduced from $3.00 to $2.50, or a saving of 50 cents per hogshead to each shipper. The Association also participated in the adjustment payments on tobacco which was flooded in both warehouses in 1933. These adjustment payments were made from appropriations made by or for the warehouses. In the case of the State Tobacco Warehouse, $30,000 was appropriated to pay for flooded tobacco. In the case of the Locust Point Warehouse, $17,500 was appropriated to pay for the flooded tobacco in that warehouse. The Association curtailed outstanding certificates of indebtedness held by its members, amounting to more than $26,700. In order to accommodate farmers purchasing seed and feed from the Association, a number of local warehouses have been set up in the country. The Association had an increase in the sale of fertilizer of 639 tons over 1933, or a total of 5,233 tons. The outlook for sale of the 1934 crop of tobacco seems to be very favorable because of increased cigarette consumption combined with the fact that there was a very slight carry-over of tobacco from 1934 to 1935. The 1934 crop is not storm-damaged and, as a whole, contains a fair percentage of good, salable tobacco. The Association is now organized for efficient and courteous service and it is believed that it will do a greater business in 1935 than it did in 1934.

REPORT

OF THE

4-H Club Leaders' Conference

January 9, 1935

Baltimore, Maryland

Leaders: Miss Dorothy Emerson, Girls' Club Agent.
Mr. E. G. Jenkins, State Boys' Club Agent.

Subject: "Building the Future or Maryland Through 4-H Club Work"—Extension Bulletin 72.

The meeting was called to order by Mr. Jenkins.

Miss Emerson reviewed Bulletin 72, "Building the Future of Maryland Through 4-H Club Work" and called for methods of its use among local leaders from Home Demonstration Agents, Miss Maud Bean, Allegany County; Miss Margaret Smith, Talbot County; Miss Helen Schellinger, Kent County, and Assistant County Agent Mylo S. Downey, Allegany County. It was generally agreed that the bulletin is most helpful to agents and club leaders, but must be used as a guide; its suggestions lead to much better plans, programs and methods when adapted to specific conditions.

Miss Louise Pusey, University of Maryland staff, and delegate from Prince George's County 4-H Club Council, reported on the Student Section Conference of the American Country Life Association in Washington and on the Senior 4-H Club Council Western Shore Conference in Frederick, November 3. Two resolutions passed at Frederick directly affected this leader's conference:

1. Each County Council will select a 4-H Club promotion committee, which will work with the County Extension Agents to improve club work in every possible way and to report regularly to the County Council.

2. Each County Council will select a young man and a young woman to represent them on State 4-H Club promotion committee, which will work with the State 4-H Club Agents and report to the State Senior Council. Mr. Russell Umstead, Montgomery County, chairman of the State Senior Conference, supplemented this report with statements of the objectives of the older youth with regard to backing up county and State Extension programs.

Mr. Abram Gottwals, Caroline County, and Mr. Evan Meese, Allegany County, started a discussion of how senior 4-H councils can and do help local leaders and county agents. Experiences, advice, interpretations and suggestions were contributed by Dr. J. D. Blackwell, State Supervisor of Vocational Education; by County Agents John Magruder, O. W. Anderson, Mylo Downey, George Clendaniel; Home Demonstration Agents Miss Edythe Turner, Miss Bean; Local Leaders Miss Erna Riedel, Mrs. L. L. Hurley, Mrs. Eugene Sellman, Miss Elizabeth Twining, Miss Dorothy Peddicord, Mr. Calvin Skinner and others.

The important points brought out in this general discussion were:

Since 4-H Club work is a part of the Extension program the Extension agents are responsible for the items of the program for senior councils as well as for the regular clubs.

Recreational and social program of each council must be made suitable to the community needs. Each county or community group must find its particular needs and adapt its program to local conditions.

Very few members of councils can lead 4-H clubs, but through the promotion committees aid can be given to Extension agents in finding suitable leaders and also in promoting leader training schools.

Several types of training meetings and schools were reported, and it was concluded that no one plan for conducting such meetings can be used by all counties nor for every need in any county. Each case must be worked out to suit conditions and needs.

A definite, well-outlined program should be made out by and for each 4-H Club and each senior group.

REPORT
OF THE

Home and Community Committee Meeting

Lord Baltimore Hotel
January 10, 1935
Baltimore, Maryland

At 10 o'clock, on Thursday morning, January 10, 1935, the Home and Community Committee meeting was called to order in Parlor D of the Lord Baltimore Hotel by the chairman, Mrs. Harry T. Williams of Kent County.

Meeting opened with the Lord's Prayer, led by Mrs. R. C. F. Weagly.

Group singing was led by Mrs. Randall Spoerlein, Carroll County.

Vice-Chairman Mrs. Harry Davis, Frederick County, gave a very fine synopsis of the National A. F. B. F. convention in Nashville, Tenn. Her report was so interesting that it made all who had not attended wish for the opportunity to attend the next.

Minutes of last year's meeting were then read by the secretary.

Mrs. Orville H. Myers, Washington County, gave two readings: "When the Minister Comes to Tea" and "Encouragement," both of which were greatly enjoyed by all.

Mrs. W. W. Rambo, Queen Anne's County, who had participated in the Maryland Women's Speaking Contest, very eloquently delivered her splendid address, "The Farm Woman and the New Deal."

Secretary C. E. Wise brought a few words of greeting and encouragement, which were deeply appreciated.

A refreshing entertainment feature was then conducted by Miss Helen Schellinger, Kent County home demonstration agent.

Greetings from the State Farm Bureau were brought by President Charles T. Cockey, who kindly assured us that women are needed in the organization.

Miss Grace Frysinger, field agent, U. S. D. A., contributed many helpful suggestions on "Program Planning."

Miss Mary Mims, sociologist of Louisiana, spoke briefly on "Woman's Place in Community Organizations."

Miss Mims said that Louisiana is very grateful to Maryland, because Maryland has done so much for Louisiana. She said, "Women must take upon themselves the job of looking after life's extras rather than just the necessities of life." Every boy or girl has a right to two heritages—

blood heritage and community heritage. A boy or girl without a community is like a man without a country." She also said that a program should take in every talent possible in the community.

Mrs. M. M. Stewart, Anne Arundel County, made very pleasing remarks when called upon by the chairman.

Sixteen counties responded to roll call as follows: Anne Arundel, 2; Baltimore, 11; Caroline, 3; Carroll, 7; Cecil, 2; Charles, 3; Dorchester, 1; Frederick, 10; Harford, 1; Howard, 4; Kent, 4; Queen Anne's, 3; Talbot, 3; Washington, 6; Wicomico, 2; Worcester, 1.

Motion made and carried that any woman from a Farm Bureau family be eligible to enter speaking contest in 1935.

Motion made and carried that support be given to the proposed poultry legislation.

Mrs. Harry T. Williams was named representative on the Poultry Board.

The recommendation made last year that no officer succeed herself more than three consecutive years was tabled for one year.

Chairman Mrs. Williams, having been elected delegate to represent the South in the National Associated Women of the A. F. B. F., gives us an immediate contact with the National that we desire to retain. Therefore, Mrs. Williams was re-elected chairman for one year. Mrs. Harry Davis was re-elected vice-chairman for one year.

Mrs. R. C. F. Weagly was renamed secretary.

Meeting adjourned.

THE FARM WOMAN AND THE NEW DEAL

By MRS. W. W. RAMBO
Sudlersville, Md.

The farm woman of today has climbed a long, hard and steep hill since the days when grandma sat by the fireside knitting socks for the family. She has learned much from the experiences of the last few decades. What an interesting picture we can form in our minds as we vision the factory in the farm home of yesterday—mother and daughters weaving and manufacturing clothing and other things for the entire family, while father and sons grew the raw materials. They were happy and self-sustained in an isolated place in life. But, with the changing conditions bringing improved highways, automobiles, radios and telephones, the rural home became as much a center of culture and education as the city home. The gradual transformation is a long story, and with all due respect to the debt we owe our ancestors, today we find the farm woman a different woman, alert and interested in the things of the nation as a whole.

True, the farm woman has learned much, but she has not enjoyed that demonstration of how a wealthy nation with an income of 88 billions of dollars can be so well organized that the farmer's share was only 9.3 per cent, and in the year 1932 the farmer's share was reduced to about 7 per cent.

The farm woman has not enjoyed that demonstration of how 30 millions of farm people, plus 20 millions in rural towns, who are directly dependent upon the farm, could be made so poor in the midst of abundant wealth in the form of a surplus of 400 million bushels of wheat, 13 million bales of cotton, 374 million pounds of tobacco, along with a surplus of pork, corn and other farm commodities. Now, it would seem that the possession of farm commodities would add material wealth, yet a visit to the rural sections showed farm buildings in need of repair and paint, soils depleted and taxes unpaid.

At least there seemed to be some relation between the miles of city bread lines and the farmer's income not being sufficient to buy the goods produced in the city factories.

The farm woman is her husband's business partner—she puts herself into the business, her health, appearance, talents and energy; therefore, she is interested in the advancement, promotion and protection of the business and in the economic, legislative, social and educational interests of the farm family, and she was interested when we seemed to have learned that economics is just a study of human needs and wants, plus ways and mean of supplying them regardless of whether those human beings lived in the city or out on the farm; that collective action applies to agriculture as well as to the industries that produce the things which a farmer must buy.

Experience has taught us that where there is no definite planning there is no notable attainment.

The farm leaders, some of whom are women, recognized the need for a stronger organized effort to educate public opinion to the necessity of restoring agriculture to equality with industry; they recognized the need of a strong organization through which to serve both the producer and the consumer, believing that there must be a balance between the income of the rural people and the income of the city population to insure our national welfare.

At last it became generally recognized that there is a very definite relation between rural and city people—that prosperity for one makes more prosperous times for the other.

After about fifteen years of activity, organized power and influence, the Farm Bureau was ready to meet the new Administration with its pledge for a New Deal for agriculture. President Roosevelt did not consult Wall Street for advice in formulating a program; he called the leaders of organized agriculture—out of which grew the Agriculture Adjustment Act, trying to achieve a balanced agriculture. It is based on the experience of the past and was framed to treat the farm problem as a whole and in its relation to the other basic elements of our national life.

The opposition to the plan has come from those who do not understand

and from those selfish interests which took such a heavy toll from the farmers and consumers because their former exhorbitant profits are being lessened. We hear criticism from many angles—some of the critics tell us that the processing tax, crop reduction, a planned agriculture is just a popular fallacy of the present administration, which they term a form of European dictatorship. Well, one great difference between the American style dictator and the European is that we vote ours in and they tote theirs out.

The New Deal may not be all right, but surely it is not all wrong. It is a challenge to capitalism. It dares to challenge their methods. Capitalism has always taken very good care of their factories, machinery, dividends and reserves, but it has neglected human beings. It has persisted in misinterpreting the aspirations and ideals of the great rural population and the factory wage earner.

The New Deal is the dawn of a new economic order. Being of human origin, it is fallible, but it is based on the brotherhood of man. The intelligent farm woman believes that the principles are fundamentally sound, even though some of the vehicles of administration may get lost on a wrong road. She has faith in the New Deal because it is based on the needs and welfare of the masses of people. It offers a broad, constructive program, aggressive in its demands instead of the survival of the fittest.

The farm woman recognizes the need for and the value of that better standard of living which the New Deal refers to, for she still sees thousands of miles of farm women carrying water from that old pump into a house, with coal oil lamps and no bathroom serving a family gathered around a one-room stove while the rest of the house is cold; all because the farm income prohibits the improvements they would like to have. Yet the fruits of their labor do provide an abundance of these things for the more favored, and yet the farm woman has faith to vision a coming farm generation whose station in life will be far removed from that of today because final steps were taken last January to organize the National Agriculture Conference through which farm organizations can work for a unified program. The Administration welcomed this group and uses it as an official advisory council in its agricultural program.

Why, even the famous Canadian quintuplets were born to a farm woman and in a farm home.

The intelligent farm woman sees increased educational advantages in the New Deal. She sees interest in a common cause for a general welfare and hopes it will bring forth fruit a hundred-fold. She has always sought to dignify the profession of agriculture and has worked hard to help educate the family; her influence has marked the progress of civilization by the type of men and women who have gone out from the home into the world to man the machinery and destiny of the nation.

Someone has said that the fifty millions of rural people are the foundation of the nation. But the better type farm woman believes that any nation rests upon an enduring foundation, develops and prospers only so long as its people look to God for his blessing and guidance.

MINUTES

OF THE

SECOND ANNUAL MEETING

OF THE

Maryland Farm Roadside Market Association

Lord Baltimore Hotel

January 10, 1935

Baltimore, Maryland

The meeting was called to order by the president, A. H. Nofsinger at 10.30 A. M.

E. P. Walls, secretary-treasurer, read the minutes of the last annual meeting, which were approved.

President Nofsinger in his opning remarks asked the audience to present any suggestions for the benefit of the organization, and stressed the need of sufficient members in order to obtain the greatest results from collective effort. He also suggested that there is no cause for discouragement in the slow but sure increase in membership as such an organization would be more stable than one with too rapid growth in the beginning.

He suggested advertising the different roadside markets in the several counties, especially in the Washington and Baltimore newspapers, when sufficient funds are available; emphasized the necessity of all members displaying the official sign in order that the buying public may become familiar with it as a designation of those markets which have adopted and maintain a high standard of quality and business ethics; pointed out that the success of roadside market business oftentimes depends upon the personality of the attendant and his ability to meet prospective customers in a pleasant manner; and called attention to Bulletin No. 365—"Roadside Markets in Maryland"—by Dr. S. H. DeVault and R. F. Burdette, which publication gives valuable information and suggestions for general improvement.

A number of those present took part in the discussions, particularly Messrs. F. L. Emge, S. L. Deitz, Mr. Parks, and S. B. Shaw, Chief of the Department of Markets.

The importance of joining the organization and the advantages to be derived therefrom, and the displaying of the official sign were discussed.

Mr. Shaw in his remarks suggested the holding of summer tours in various sections of the State to which the general public should be invited, including housewives in the city and other roadside market operators who are not members of this Association. This suggestion was well received by all and the meeting went on record as favoring the initiation of such tours during the market season of 1935.

An invitation was given to any non-members present to join the Association. The secretary asked for suggestions at any time as to how the Department of Markets could render assistance to this important method of marketing farm products in Maryland.

The following officers were elected for the current year:

A. H. Nofsinger, President.
F. L. Emge, Vice-President.
E. P. Walls, Secretary-Treasurer.

There being no further business, the meeting adjourned at 12.15 P. M.

MINUTES

OF THE

ANNUAL MEETING

OF THE

Maryland State Poultry Association

AND

Maryland State Poultry Council

January 9, 1935

Baltimore, Maryland

MARYLAND STATE POULTRY ASSOCIATION

Meeting of Maryland State Poultry Association called to order informally by W. H. Rice, in the absence of President Holsinger, at 10 A. M.

The question of a presiding officer having arisen, Herbert D. Copeland was elected as temporary chairman.

In the absence of Secretary Fell, the chairman named W. H. Rice as temporary secretary.

The chairman called for the report of the Auditing Committee. No response. The chairman explained that it had been understood that such a committee was to have been appointed by President Holsinger. The chairman then called for the financial report of the secretary-treasurer. No response.

Herbert D. Copeland, chairman of the Committee on Reorganization of the Maryland State Poultry Association, consisting of Harry Rieck, L. E. Holsinger and W. H. Rice, then related in detail the reorganization steps to date, beginning with the action of the Board of Directors of the Maryland State Poultry Association in authorizing and appointing a Committee on Reorganization, the unanimous recommendation by said committee to the Board of a reorganization along the lines of a federated organization and the unanimous approval by the Board of this recommendation.

W. H. Rice, the Secretary of the Maryland State Poultry Association, Committee on Reorganization, then read all the minutes of this committee. Same were approved by popular vote.

By direction of the chairman, the secretary read the following resolution adopted by the Board of Directors of the Maryland State Poultry Association on Monday, October 1, 1934, at Annapolis:

Resolved, That we, the Directors of the Maryland State Poultry Association in meeting assembled hereby approve the report of the Committee on Reorganization, endorse the plan proposed, and authorize said committee to proceed to reorganize the present Maryland State Poultry Association and other poultry interests of the State into a Maryland State Poultry Federation.

The chairman ruled that this resolution of the Board of Directors of the Maryland State Poultry Association did not constitutionally dissolve or reorganize the Maryland State Poultry Association, the power to do either of which was vested in the membership alone. The chairman expressed the opinion that reorganization of the Maryland State Poultry Association would be effected by ratification by the membership of the pending resolution or by resolution from the floor. Having determined there was present a constitutional quorum, the chairman then put the motion, with the vote as follows:

Aye—Mrs. W. W. Hopkins, H. H. Rieck, Ivon T. Morton, C. F. Hines, H. D. Copeland, J. W. Evering, Mrs. W. W. Rambo, D. Ligon Thompson.

Nay—None.

The chairman then declared the Maryland State Poultry Association adjourned.

MARYLAND STATE POULTRY COUNCIL

In the absence of Temporary President Holsinger, Herbert D. Copeland as chairman of the Committee on Reorganization, took the chair.

After some discussion, the chairman ruled and, on vote, was sustained that the successor to the Maryland State Poultry Association could take no legal action until the Credentials Committee had reported.

Temporary Secretary Rice reported that letters of credentials with checks for affiliation dues had been received by him from the Caroline and Talbot County Poultry Associations and the Maryland-Virginia Egg Producers Cooperative Association, Inc. Also checks for affiliation fees, but no letters, from the Queen Anne's and Prince George's County Poultry Associations and the Maryland Turkey Growers' Association. Also, letter from Maryland Hatchery Association designating its delegate and with the statement that check would be mailed later.

Minutes of the October 25 meeting of various poultry association representatives at Annapolis were read and approved.

Minutes of the temporary organization meeting of the Council, November 23, in Annapolis were read and approved subject to change of policy.

Temporary Secretary Rice suggested that in the absence of Delegate Holsinger of the Hatchery Association that Mr. Evering be accepted as the State Hatchery Association alternate delegate which was duly authorized.

The following delegates were present and qualified to vote: H. H. Rieck, Caroline County Association; Mrs. W. W. Rambo as alternate for Queen Anne's County Association; J. W. Evering as alternate for State Hatchery

Association; J. J. Cowan for Prince George's County Association; H. D. Copeland for Maryland-Virginia Egg Cooperative; Ivon T. Morton, Talbot County Association.

Under the report of the Constitution and By-Laws Committee, Secretary Rice reported a regular meeting of the committee and a constitution and by-laws drafted, but that Mr. Copeland and Mr. Evering had offered a substitute constitution and by-laws. This substitute was read by Secretary Rice upon request of Chairman Copeland. Chairman Copeland suggested that each article be acted upon as a whole and not by sections in order to save time.

By unanimous vote it was decided that the name of this organization shall be the Maryland State Poultry Council, with the intent that it include organizations of game bird breeders and all other organizations of breeders and producers of feathered fowl.

The proposed constitution and by-laws were duly approved and adopted after several amendments.

Chairman Copeland then called upon Dr. T. B. Symons for a few words. Dr. Symons urged serious consideration by the Council of its responsibility as the organized representative of the industry in the State. Especially in reference to relations with commercial organizations, he stressed the necessity for careful consideration of the matter of membership in the Council of commercial organizations and their probable effect on the future of the Council. He pointed out the relationship of the Agricultural Corporation and the Agricultural Society as an example of harmonious relationships without the corporation being definitely affiliated with the Society. He also pointed out the example of a tomato canner-grower group on the Eastern Shore several years ago which was refused direct membership in the Society. He urged that the Council should be kept strictly an educational and promotive organization.

Chairman Copeland brought up the matter of election of a director to the Agricultural Society, and called for nominations open for such a director to represent the State Poultry Council. Mr. H. H. Rieck, Preston, Maryland, was chosen as director to the Maryland Agricultural Society.

Chairman Copeland next presented the matter of delegates to the Northeastern Poultry Producers Council meeting in New York, January 14, 15, 16.

Messrs. Evering and Copeland were elected as delegates to the Northeastern Poultry Producers Council for 1935, and Mr. Copeland was directed to attend the meeting of the Northeastern Poultry Producers Council at New York, January 14, 15 and 16, his expenses to be paid by the Maryland State Poultry Council.

The matter of election of the State Hatchery Code chairman was next presented and after some discussion on the advisability of the Council electing such a chairman, it was voted to refer the matter to the Maryland State Hatchery Association for their action.

AFTERNOON MEETING, JANUARY 10, 1935

Meeting called to order 2 P. M. by Acting Chairman Copeland. Voting delegates present: J. H. Moffett, Queen Anne's County Association; H. H. Rieck, Caroline County Association; J. W. Evering, alternate for Maryland Hatchery Association; J. T. Morton, Talbot County Association; J. J. Cowan, Prince George's County Association; H. D. Copeland, Maryland-Virginia Egg Producers, Incorporated.

Results of the ensuing election of officers were as follows: President, H. D. Copeland, Anacostia, D. C., Route No. 3; first vice-president, H. H. Rieck, Preston; second vice-president, J. W. Evering, Stemmers Run; Secretary, W. H. Rice, College Park; treasurer, J. J. Cowan, Bowie, Md.

Under "The Status of Maryland in the Northeastern Poultry Producers Council," President Copeland stated that while apparently no official action had ever been taken by the Maryland State Poultry Association to affiliate with the Council, yet such affiliation was in effect a fact by the naming of producer and official delegates in 1932, and that the Northeastern Poultry Producers Council officers had offered to accept Maryland's membership on the basis of paying $75.00 dues to cover 1932-1934 and 1935.

After some discussion on the finances of the State Council and its ability to pay back dues of the Maryland State Poultry Association, it was authorized that the State Council pay dues to the Northeastern Poultry Producers Council for 1935, and that 1933 and 1934 dues for the defunct Maryland State Poultry Association be paid at some future date, when and if necessary.

President Copeland then appointed a committee consisting of Messrs. H. H. Rieck, Mrs. W. W. Hopkins and Mr. J. W. Evering to interview Dr. T. B. Symons and secure $37.50 on the dues owing the Northeastern Poultry Producers Council, inasmuch as official but non-voting delegates from the Extension Service as well as from producers are eligible in the Northeastern Poultry Producers Council.

The matter of delegation of someone from the University to attend the Northeastern Poultry Producers Council annual meeting in New York, January 14, 15, 16, was presented by the secretary for the Council's recommendation.

W. H. Rice was endorsed by the Council to represent the University of Maryland and President Copeland requested the committee appointed to confer with Dr. Symons also present him with a request for Mr. Rice to attend the Northeastern Poultry Producers Council convention.

The matter of the annual summer meeting of the Northeastern Poultry Producers Council to be held in Maryland this year was presented by the president and discussed by several of those present.

Dr. R. A. Pearson, president of the University of Maryland, was introduced to the group and assured those present of the interest of the University in the activities of the poultry organizations, and expressed a desire to cooperate in acting as host to the Northeastern Poultry Producers Council meeting at College Park this summer.

The matter of official agencies' and organizations' representation on the State Council was presented by the president who stated that 17 organizations and agencies should be represented, these being as follows: (1) Poultry Department, University of Maryland, representing teaching and research. (2) Maryland State Department of Markets representing regulation and inspection. (3) The Maryland Livestock Sanitary Service representing poultry diseases and research. (4) Department of Agricultural Economics, University of Maryland, representing poultry economics. (5) Poultry Extension representing extension education. (6) County agricultural agents representing education. (7) Home demonstration agents representing education. (8) Maryland Farm Bureau Federation representing farm organizations. (9) Maryland State Grange, representing farm organizations. (10) Maryland Federation of Women's Clubs representing consumers. (11) Maryland League of Women Voters representing consumers. (12) Maryland Federation of Parent-Teachers Association representing consumers. (13) Maryland Roadside Markets Association representing retailers. (14) Boys' and Girls' 4-H Clubs representing producers. (15) Home and Community Club of State Farm Bureau Federation representing producers. (16) Future Farmers of America of the State representing producers. (17) Maryland Veterinary Medical Association representing disease control.

Invitations to the above agencies and organizations to appoint representatives on the Council were duly authorized.

President Copeland discussed the financing of the State Egg Law Committee's activities and received promise of $5.00 from each County Poultry Association and $10.00 from each State Association.

Secretary Rice requested an appropriation of $20.00 to cover the printing of suitable stationery, and membership certificates in the Council and for postage which was duly authorized.

Delegates were requested by the president to submit the names of prospective sustaining members to be approved by the Council and solicited for membership. The secretary read the names of those proposed which were duly elected to sustaining membership.

Under head of "Program of Work for the Council," the president requested suggestions from all present.

Mr. Rieck proposed the organization of more county poultry associations.

Mr. Moffet proposed a state poultry or hobby exposition. In discussing this proposal the president mentioned the proposed Northeastern Poultry Producers Council Exposition. Support to the Northeastern Poultry Producers Council Exposition was voted by the Council.

Dues to the State Agricultural Society were authorized to be paid.

The annual summer meeting of the Maryland State Poultry Council was voted to be held at College Park in conjunction with the Northeastern Poultry Producers Council annual meeting.

Mrs. W. W. Hopkins reported difficulty in Talbot County in getting pullorum testing done, which difficulties and reasons therefore were explained by Dr. C. R. Davis of the State Livestock Sanitary Service.

President Copeland appointed the following Standing Committee Chairmen: Breed Improvement, W. H. Rice, College Park; Marketing, Herbert D. Copeland, Anacostia, D. C.; Legislation and Legal Advice, Clarence M. Roberts, Lanham, Md.; Economic Stabilization, S. H. DeVault, College Park, Md.; Feeding and Nutrition, Roy H. Waite, College Park, Md.; Disease Control, H. M. DeVoult, College Park, Md.; Education and Research, George D. Quigley, College Park, Md.; Poultry Codes, George H. Vandermast, Stemmers Run, Md.; Finance, J. W. Evering, Stemmers Run, Md.; Organization, H. H. Rieck, Preston, Md.; Publicity, A. H. Snyder, College Park, Md.; Resolutions, Mrs. W. W. Hopkins, Cordova, Md.

EVENING SESSION, JANUARY 9

Meeting called to order by President Copeland at 7.10 P. M.

The president introduced Dr. H. W. Titus, research chemist in poultry nutrition of the United States Department of Agriculture at Beltsville, Maryland, who delivered the following instructive and interesting paper on the relation of nutrition to the hatchability of eggs in domestic fowl with discussion.

THE EFFECT OF NUTRITION ON THE HATCHABILITY OF THE EGGS OF THE DOMESTIC FOWL

By Dr. H. W. Titus
United States Department of Agriculture
Beltsville, Md.

The importance of information regarding the factors which affect the hatchability of eggs is obvious, when one considers that more than one hundred million (100,000,000) dozen eggs are used for hatching each year in the United States. At twenty cents (20c) per dozen, these eggs are worth more than twenty million dollars ($20,000,000). If on the average, forty per cent. (40%) of these eggs fail to hatch, the annual loss, thus incurred, is more than eight million dollars ($8,000,000), to say nothing about the incubator space and the time that is lost in handling the eggs which do not hatch.

There are a number of factors which have been found to affect the percentage hatchability of eggs which set under hens, or are artificially incubated. Among these is infertility, but, in that which follows, consideration will be given to only those factors which affect the percentage hatchability of the fertile eggs. It has been found that the ability of fertile eggs to hatch is influencel by:

1. The age of the female producing the eggs. As the age of the female increases, the percentage hatchability of her eggs tends to decrease.
2. Inheritance. Hatchability is an inheritable character.

3. Inbreeding. Close inbreeding generally impairs the hatching quality of eggs but outcrossing improves it.

4. The size of the eggs. In general, extra large eggs do not hatch so well as eggs of average size.

5. The length of time the eggs are held before being set. Holding eggs for more than a week definitely lowers their hatchability, unless the temperature at which they are held is between 55° F and 60° F.

6. The temperature at which the eggs are held prior to incubation. Eggs which are held for any appreciable length of time at low (i. e., below 50° F.) or high (i. e., above 70° F.) temperatures do not hatch so well as those held between 55° F. and 60° F.

7. The incubation of the eggs. Temperature, humidity, change of air, and turning of the eggs are very important factors.

8. The nutrition of the flock from which the eggs are obtained. Apparently, there are a number of nutritional factors which affect hatchability. The remainder of this discussion will be restricted to the effect of nutrition.

When the flock is adequately nourished and the eggs are properly held and incubated, it is not too much to expect that eighty per cent. (80%) or more, of all fertile eggs set will hatch. The question is: What constitutes adequate nourishment? We shall not attempt to give a full and complete answer to this question but we shall attempt to review briefly our knowledge of nutritional factors which affect hatchability.

The Vitamins

During the last ten years poultry nutrition workers have been giving more and more attention to the study of vitamins and the results of their investigations in this field have been of inestimable value to the poultry industry. However, it is within only the last half of this period that the vitamin requirements of chickens, from the point of view of hatchability, have received much consideration.

It is generally accepted that an adequate supply of vitamins A, D, E, and G in the feed of chickens is necessary for the production of eggs of high hatchability but, unfortunately, the optimum quantity of each is still unknown. Furthermore, evidence is being accumulated which indicates that there is at least one other nutritive factor, possibly of the nature of a vitamin, which is required.

Just what effect a deficiency of vitamin A in the feed of laying chickens has on the hatchability of their eggs is not understood. It is known, however, that if chickens are fed a diet low in vitamin A, they do not lay well and the ability of their eggs to hatch is somewhat impaired. At present the vitamin A requirements of chickens is being studied by several groups of workers and it is to be hoped that more exact information on this subject will be soon available. In the absence of such information it is well to do what one can to guard against a possible deficiency of this vitamin.

If the birds have access to good range, there is but little possibility of a vitamin A deficiency so long as there is green feed available. However, if the birds are kept in confinement, the inclusion of about one and one-half per cent. (1.5%) of a good straight cod liver oil in the diet will be a satisfactory safeguard, even though no other potent source of vitamin A is fed. To be classed as good, a cod liver oil should contain not less than 600 International Vitamin A. units per gram.

Apparently, vitamin B in any significant quantity is not required by the developing embryo. Nevertheless, if an egg is deficient in this vitamin, the hatched chick is likely to die soon after it emerges from the shell. So far as is known, the ordinary diets of chickens contain sufficient vitamin B for good hatchability and very probably enough for good production of eggs as well.

The evidence avaliable indicates that the chicken does not require preformed vitamin C in its diet and that, if it does require this vitamin for normal nutrition, it is ordinarily able to manufacture all it needs. It has been demonstrated recently that although there is no detectable quantity of vitamin C in an unincubated egg, vitamin C is formed during embryonic development.

The effect of a deficiency of vitamin D in the chicken's diet on the hatchability of the eggs laid has been studied by several investigators. Nevertheless, neither the minimum, nor optimum, requirement of vitamin D for good hatchability is known with any degree of accuracy. It is known, however, that the eggs produced on a diet practically deficient in vitamin D do not hatch well. Furthermore, there is some evidence that an excessive quantity of vitamin D in the diet has a definitely deleterious effect on the production and hatchability of eggs.

Studies on the vitamin D requirement of chickens, from the point of view of egg production, indicate that each bird requires about 70 to 80 International units of vitamin D per day. If the diet supplies about 20 International units per ounce of feed consumed, the vitamin D requirements will ordinarily be adequately met. A good straight cod liver oil will supply at least twenty-four hundred (2,400) International vitamin D units per ounce or about 85 of these units per gram. Accordingly, the feed supplied to laying stock should contain at least one per cent. (1%) of good cod liver oil, or its equivalent. If one and one-half per cent. (1.5%) of such an oil is contained in the total feed consumed by laying chickens, both the vitamin A and vitamin D requirements will be taken care of.

The usual diets fed to laying chickens are not likely to be deficient in vitamin E, inasmuch as this vitamin is present in many of the common feeding stuffs. However, if a diet deficient in vitamin E is fed, the hatchability of the eggs produced is markedly lowered. Experimental evidence on the effect of a deficiency of this vitamin on hatchability points to a definite connection between such a deficiency and an increased early embryonic mortality.

Some investigators have obtained experimental results which they have interpreted as demonstrating that a deficiency of vitamin G in the diet has a harmful effect on hatchability. However, if the diet of confined laying chickens contains at least five per cent. (5%) of dried skim—or butter milk, or five per cent. (5%) of a good grade of alfalfa leaf meal, it is very unlikely that it is deficient in vitamin G. The inclusion of five per cent. (5%) of alfalfa leaf meal and five per cent. (5%) of one of the commercial dried milks doubly assures the presence of an adequate supply of this vitamin. If the chickens have access to green growing things, they will receive sufficient vitamin G to take care of all their needs.

The Proteins

Much of our knowledge of the protein requirement of the chicken for egg production and hatchability is qualitative rather than quantitative. In general, protein supplements of animal origin are more valuable than those of plant origin for promoting good egg production and high hatchability. This is especially true in the case of birds not having access to range, i. e., to green growing plants.

There is some disagreement regarding the quantity of protein in the diet of laying chickens which is optimum for egg production. However, it is undoubtedly true that the optimum quantity depends on the nature of the feeding stuffs which supply this nutrient. In the case of confined birds egg production tends to increase as the proportion of protein in the diet is increased. The increase in production is less marked on the higher levels of protein intake than it is on the lower levels. In the case of birds having access to green growing plants—particularly Kentucky bluegrass, alfalfa, and some of the clovers—an increase in the protein content of the feed given the chickens is much less effective in increasing their egg production. This is probably due to the fact that these green growing plants are a good source of protein of excellent quality.

One fact of considerable importance, from the point of view of hatchability, is that eggs produced by chickens on good range almost invariably hatch better than those produced by confined chickens although in both cases the same diet is fed.

When chickens are confined, it is necessary to feed them a diet containing between eighteen and twenty per cent. (18 and 20%) of protein—one-third (⅓) to one-half (½) of which is of animal origin—if both good egg production and hatchability are to be obtained. When chickens have access to good range, less protein of animal origin is necessary and the protein content of their diet may be much lower, say, between fourteen and sixteen per cent. (14 and 16%).

The Mineral Elements

The mineral requirements of chickens have received comparatively little attention, except in the case of calcium and phosphorus. A diet deficient in phosphorus would be an unusual one, indeed; but in some diets a deficiency of calcium is a distinct possibility.

The laying chicken metabolizes a relatively enormous quantity of calcium during a year or egg production. If a chicken lays two hundred (200) eggs of average size, the calcium carbonate in the shell will weigh nearly two and one-half (2.5) pounds. Each egg of average size a hen lays contains in its shell nearly one-fifth (⅕) of an ounce of calcium carbonate or eight one-hundredths (0.08) of an ounce of calcium. Since a bird in full production will consume, according to its size, between one-fourth (¼) and one-third (⅓) of a pound of feed per day, the weight of the calcium in one egg's shell is equivalent to one and one-half (1½) to two (2) per cent. of the weight of the feed eaten each day.

The feed need not contain all of this calcium but it should contain between one (1) and one and one-half (1½) per cent. of this element and the remainder should be made available to the birds in the form of a calcium-bearing grit, such as oyster shell, coarsely ground limestone, or calcite.

If there is a pronounced deficiency of calcium in the chicken's diet, she will cease to lay eggs. A partial deficiency will lead to the production of eggs with relatively thin shells which, for this reason, may not hatch well.

If the ratio of calcium to phosphorus is too low, or two high, the chicken will not be able to use the calcium efficiently and fragile egg shells may result. Also, a decrease in hatchability may take place when the calcium-phosphorus ratio of the chicken's diet is too low or too high. The experimental evidence at present available indicates that a calcium-phosphorus ratio of about two to one (2 to 1) is quite satisfactory and that it may vary from one and eight-tenths to one (1.8 to 1) to two and one-half to one (2.5 to 1) without having any deleterious effect on egg production or hatchability.

The inclusion of one-half to one per cent. (0.5 to 1%) of ordinary salt in the chicken's feed supplies the additional sodium and chlorine necessary to prevent a deficiency of these two elements—especially the former—if some salt is not supplied.

Individual Feeding Stuffs

The writer and his co-workers have studied the effect of a number of individual feeding stuffs on hatchability. In most of these studies a basal diet containing ground yellow corn, wheat bran, rolled oats, alfalfa leaf meal, ground limestone, steamed bone meal, sodium chloride, sodium sulphate, and cod liver oil was used. This basal diet was modified by adding the feeding stuffs to be studied and then making such adjustments in mineral content as seemed desirable. The quantity, in the final diet, of the feeding stuff being studied was usually twenty per cent. (20%). The birds had access to direct sunshine but not to green growing things.

The eggs from the chickens on the basal diet hatched fairly well—about sixty per cent. (60%) of the total fertile eggs set. Cottonseed meal, soybean meal, flame-dried menhaden fish meal, and some meat meals, when added to the basal diet, lowered the hatchability, whereas yeast, white-fish meal, crab scrap meal, dried buttermilk, and a mixture of high grade meat meal, dried buttermilk, and white-fish meal raised the hatchability. In general, meat meals were found to be very variable in their effect on hatchability: some markedly increased hatchability, some just as markedly decreased it, and others had no effect.

In the case of those feeding stuffs which decreased hatchability the decrease was brought about by an increase in so-called second-week embryonic mortality.

It was previously stated in the discussion of the vitamins that there was evidence of another factor—probably of the nature of a vitamin—which was required for good hatchability. If there is such a factor, it is probably associated with the proteins. It is supplied by liver, certain meat meals, dried milk, white-fish meal, and green growing plants, such as Kentucky bluegrass.

One interesting result of our studies on the effect of nutrition on hatchability was that birds reared on certain restricted diets produced eggs which hatched better than those from birds reared on adequate diets and then placed on these restricted diets after they were mature. The reason for this phenomenon is not readily apparent although several plausible explanations suggest themselves. At least, until further work is done, on this problem, the desirability of rearing chicks on diets, which are qualitatively the same as those which they will be fed when they come into egg production, is suggested.

Several references have been made to the beneficial effect of green growing plants on hatchability. In practical poultry production this "first aid" to good hatchability should always be kept in mind. When possible, the breeding flocks should have access to good range—bluegrass range as a first choice and a good legume range as a close second choice. So far as is now known, giving the birds access to range is perhaps the cheapest method of supplying most, if not all, of the known vitamins, as well as protein of excellent quality and a good assortment of many of the mineral elements necessary for good nutrition.

Mr. Alben E. Jones, in charge of poultry marketing, New Jersey Department of Markets, Trenton, N. J., was next introduced by the president and made a very illuminating and interesting talk and discussion on fresh egg legislation in the Northeastern States. The following brief covers the discussion of Mr. Jones:

FRESH EGG LEGISLATION IN NORTHERN STATES

By ALBEN E. JONES

State Department of Markets, Trenton, N. J.

Mr. Jones opened his address by pointing out that there was developing a very definite trend in all Northeastern States towards egg legislation to raise the quality of eggs offered consumers in these States. He pointed out that those States near New York City with such laws will cause eggs of the lower grades to back up upon other markets not protected by such legislation. The necessity of the producers in a State having an egg law taking the necessary steps to produce high quality eggs is paramount to the success of such a law.

Mr. Jones pointed out that a fresh egg law is merely the development of educational work in quality egg production into law.

The following essentials, according to Mr. Jones, must be embodied in fresh egg legislation if it is to be successful:

1. It must be enforceable. That is, it should and must include all groups concerned from the producer to the consumer, since the basis of the law is concern for the quality of eggs as they reach the consumer.

2. Fresh eggs to mean fresh eggs. This matter must be regarded from the standpoint of honest and conscientious producers, distributors and retailers.

3. A fresh egg law should set up standards of quality regardless of where the eggs originate. A fresh egg law is a law for consumers benefit and should not be concerned with favoring any other group.

4. The law should be simple. Simplicity to the point of being readily understood by all parties affected and its capability of being explained and demonstrated by candling are prime essentials.

Mr. Jones pointed out that complicated egg grades are impracticable in an egg law and if not made simple will do much to defeat the aims and effects of such a law.

Also, legislation that involves the element of selfishness on the part of any group concerned or provisions unreasonable of enforcement will be disastrous to its aims.

A fresh egg law to be practicable must be brief and simple. Definite enforcement provisions including financing of enforcement must be made or efforts at enforcement will prove useless. Favoritism to any group concerned must not be shown or trouble is sure to develop.

Bulletins on compliance for distribution to all retailers have proved very helpful in securing cooperation from stores in New Jersey.

The Consumer Information Service of the New Jersey Department of Markets uses a mat service to all papers of the State to get egg information to consumers. This service is designed to stimulate egg consumption, and the various Home Economics agencies of the State and nation contribute material for these mats.

Information on egg sales throughout the State is secured from various parties who readily cooperate in giving such information.

In the enforcement work, Mr. Jones pointed out that representative samples of all eggs in stores inspected are candled in New Jersey. This has been found necessary to secure adequate information on compliance. The records of such inspections are broken down and studied in the State office to secure the real facts on compliance by the stores.

Mr. Jones pointed out that the New Jersey law has caused all eggs in that State to be improved in quality as producers, distributors, retailers, and consumers have generally been made quality conscious—a condition which applied in only a very limited way before the New Jersey law became effective.

The experience in New Jersey has been that details in administration of the law are very important. Close supervision and regulation of the inspectors has been found especially important, in order to keep enforcement details such as quality factors, tolerance, etc., and their interpretation reasonably uniform among the inspectors.

A sympathetic attitude and consideration for the viewpoints and interests of others on the part of all directly concerned in the enforcement of such a law is vital in securing cooperation of those inspected, which is so essential to successful operation of the law.

Mr. Jones discussed a number of questions which were asked by those present which related to details in the operation of the law in New Jersey.

President Copeland reported on progress of Producers' Egg Law Committee and that the laws in principle had been endorsed by the State and some subordinate Granges, the State Farm Bureau and some county farm bureaus. Those legislators interviewed seem favorable to this legislation.

Several factors involved in two drafts of a law were discussed at length by various individuals but no action was taken.

Meeting adjourned at 11.15 P. M.

REPORT OF EXECUTIVE COMMITTEE AND RESOLUTION COMMITTEE

Present—H. D. Copeland, H. H. Rieck, J. W. Evering and Mrs. W. W. Hopkins.

Resolution Requesting the Bureau of Markets to Institute Public Market Reports Covering the Poultry Industry in Maryland

WHEREAS, there is great need for reliable statistics concerning poultry and egg production in Maryland, cold storage holdings of poultry and eggs, imports and exports of poultry and eggs, economic trends in the industry and *et cetera;* therefore, be it

Resolved, That a special committee of the Council be appointed to confer with the Bureau of Markets of the University of Maryland regarding the feasibility of instituting a system of public market reports concerning the poultry industry of the State.

Motion by Copeland. Seconded by Evering. Unanimous.

Resolution Appointing Committee to Work for Restoration of Maryland Egg Laying Test

Resolved, That a subcommittee, known as the Maryland Egg Laying Test Committee, of the Committee on Breed Improvement be appointed by the president of the Council to consider and formulate plans for the restoration of the Egg Laying Test formerly constructed by the University of Maryland. And that said committee be, and is hereby instructed and directed to make a report on its plans to the Council at the earliest practicable date.

Motion by Copeland. Seconded by Hopkins. Unanimous.

Resolution Supporting the Viewpoint of the Northeastern Poultry Producers Council on the Proposed Butter and Egg Code for New York City

Resolved, That Maryland State Poultry Council support the viewpoint of the Northeastern Poultry Producers Council in the hearing on the proposed Poultry and Egg Code for New York City, sponsored by the National Association of Butter and Egg Distributors.

Moved by Copeland. Seconded by Evering. Unanimous.

Resolution Urging authoritative Representation of the Poultry Industry on the Maryland State Board of Agriculture

WHEREAS, the State Board of Agriculture of Maryland is an agricultural advisory body to the Governor of the State, and

WHEREAS, the poultry industry is the second largest agricultural industry in farm income in Maryland, and

WHEREAS, the poultry industry of Maryland does not have and never has had an authoritative representative on the Board of Agriculture; now, therefore be it

Resolved, By the Maryland State Poultry Council, which authoritatively represents the poultry organizations of Maryland, in annual convention assembled at Baltimore, January 9, 1935, that the Honorable Governor of Maryland be, and is hereby requested to appoint in due time an authoritative representative of the poultry industry on the Board of Agriculture.

Proposed by Mrs. Hopkins. Seconded by Rieck. Unanimous.

Resolution From the Maryland State Poultry Council to the Maryland Farm Bureau Federation in Convention Assembled at Baltimore, Maryland, January 8-11, 1935

WHEREAS, several of the Northeastern States, notably New York, Pennsylvania, Rhode Island, Connecticut and New Jersey have in the past four years enacted more or less similar laws relating to the sale and classification of eggs according to quality, and several others of the Northeastern States are planning the adoption of similar laws this year, and advisory body to the Governor of the State, and

WHEREAS, the basic idea is, or should be, fair industry representation on this Board, and

WHEREAS, the results of such laws in the above States have been very satisfactory to the consumer and have received the hearty cooperation of the majority of the trade, and have served in a very measurable way to increase the welfare of their own poultry producers and have resulted in greatly increased consumption of their native poultry products, and

WHEREAS, Maryland is geographically and economically a member of the Northeastern group of States and has very similar conditions in the poultry industry, and

WHEREAS, the Maryland State Poultry Council, representing authoritatively the poultry industry of the State of Maryland, is a member of the Northeastern Poultry Producers Council, representing authoritatively the poultry industry of the thirteen Northeastern States, and

WHEREAS, Maryland will be the dumping ground of the lower quality eggs rejected by the States having such egg legislation unless it enacts similar protective legislation, and

WHEREAS, the attached proposed egg law, sponsored by the Maryland State Poultry Council and to be introduced in the present State Legislature, has received the unanimous endorsement of the various poultry organizations of the State and has been endorsed by the Board of Directors of the Maryland Farm Bureau Federation, by the Maryland State Grange, by the Maryland Tobacco Growers' Association, by the Home and Community Department and by several County Farm Bureaus, Granges and consumer organizations; now therefore be it

Resolved, By the Maryland State Poultry Council, a member of the Maryland Farm Bureau Federation that the Maryland Farm Bureau Federation be, and is, hereby requested to support the Maryland State Poultry Council in securing the enaction of the attached proposed State Egg Law, to the end that it may protect the welfare of the consumer. Assist the trade, place the poultry industry of Maryland on a high quality basis, promote the welfare of the producer and increase the consumption of high quality native products by Maryland consumers.

Moved by Herbert D. Copeland. Seconded by John W. Evering. Unanimous.

Resolution Requesting Secretary of Agriculture to Protect the Poultry Industry Against Injury of Application of AAA Program in Certain Basic Commodities

WHEREAS, it has not been considered feasible by the Secretary of the United States Department of Agriculture to apply to the poultry industry those production control devices which have been so successful in the restoration of other branches of Agriculture, and

WHEREAS, the unavoidable effect of the AAA program for some of the basic commodity groups, more particularly wheat and corn, has been harmful to the poultry industry in that feed costs, the largest element in the cost of production of poultry and eggs, has been increased without commensurate advantages directly or indirectly accruing from the application of the AAA program to agriculture, and

WHEREAS, the poultry industry is in acute distress and is undergoing a process of liquidation to an extent far beyond that thought socially desirable for other agricultural groups and a part of this liquidation and distress is due to the AAA program in certain basic commodities; therefore be it

Resolved, That the Secretary of Agriculture be urged to re-appraise the poultry industry situation in relation to the application of the AAA program to agriculture and that, in the meantime, every practicable device or measure be utilized to counteract unavoidable injuries to the poultry industry resulting from the operation of the AAA program, at least to the extent that such injuries have been so caused.

Motion by Copeland. Seconded by Hopkins. Unanimous.

INDEX

A Page

Abrams, G. J.—Report 230
Allen, Fulton W.—Address 133

B

Bailey, George—Address 325
Beaumont, Dr. J. H.—Address 180
Bertholf, Lloyd M.—Address 240
Blackwell, J. D.—Address 324, 41
Boswell, Victor R.—Address 254
Bready, Mr.—Address 51
Bruce, O. C.—Address 202
Brueckner, Dr. A. L.—Address 333
Bryan, C. E.—Address 169
Burmeister, Gustave—Address 279
Burnside, C. E.—Address 235

C

Caffrey, D. J.—Address 272
Carmichael, B. E.—Report 296
Cash, J. C.—Address 237
Clark, K. A.—Address 336
Cockey, Charles T.—Address 130, 16
Cordner, H. B.—Address 267
Cory, Dr. E. N.—Address 164
Coon, James M.—Address 299
Cullinan, Dr. F. P.—Address 157

D

Davis, Mrs. Harry L.—Address 30

E

Eppley, Geary—Discussion 219
Evans, Mr.—Address 48

F

Fisher, Dr. D. F.—Address 149, 178
Frazier, W. A.—Address 247
Frysinger, Miss Grace—Address 75

G

Gould, Edwin—Address 172
Gourley, Dr. J. H.—Address 154, 134
Gray, Chester H.—Address 33
Gray, S. D.—Address 211
Grau, F. V.—Address 220

H

Harvey, W. R.—Address 311
Hough, Walter R.—Address 12
Holmes, F. S.—Address 212
Hotton, W. P.—Address 265

J

James, N. W.—Address 245
Jenkins, E. G.—Address 340
Jones, Alben E.—Address 369
Jones, J. W.—Address 285

INDEX — (Continued)

Page

K

Kepner, P. V.—Address ... 287

L

Lowe, C. D.—Address ... 320

M

Magness, Dr. J. R.—Address ... 143
McGregor, W. A.—Address ... 292
Miller, H. W.—Address ... 139
Mims, Miss Mary—Address ... 69

N

Nuttle, Harry—Remarks ... 11

O

Officers of Affiliated Associations, 1935 ... 7
Officers of County Farm Bureaus, 1935 ... 5
Oldenburg, F. W.—Address ... 214

P

Peterson, Dr. P. D.—Address ... 191
Pouder, G. H.—Address ... 14
Posey, W. B.—Annual Report ... 349

R

Rambo, Mrs. W. W.—Address ... 354
Report of Auditing Committee Farm Bureau ... 23
Report of Auditing Committee Horticultural Society ... 198
Report of Credentials Committee Farm Bureau ... 67
Report of Executive and Resolutions Committee Poultry Council ... 371
Report of Joint Tax Committee ... 111
Report of Nominating Committee Horticultural Society ... 198
Report of Resolutions Committee Farm Bureau ... 106
Report of Resolutions Committee Horticultural Society ... 199
Report of Secretary-Treasurer Crop Improvement Association ... 226
Report of Secretary-Treasurer Stockmen's Association ... 296
Report of Secretary-Treasurer Farm Bureau ... 18
Report of Secretary-Treasurer Horticultural Society ... 132
Roberts, Byron T.—Address ... 162, 176

S

Schrader, Dr. A. Lee—Address ... 187
Schluderberg, W. L.—Address ... 343
Silcott, James E.—Address ... 309
Smith, Wilbert—Address ... 15
Symons, Dr. T. B.—Address ... 89

T

Thomas, R. P.—Address ... 208
Titus, Dr. H. W.—Address ... 364

V

Vierheller, A. F.—Report ... 132

W

Walls, E. P.—Report ... 357
Watkins, B.—Address ... 317
Weagly, Mrs. R. C. F.—Report ... 353
Welsh, Dr. Mark—Address ... 305
Wilson, M. L.—Address ... 78

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